Journal

OF THE NATIONAL ASSOCIATION OF CHIROPODISTS

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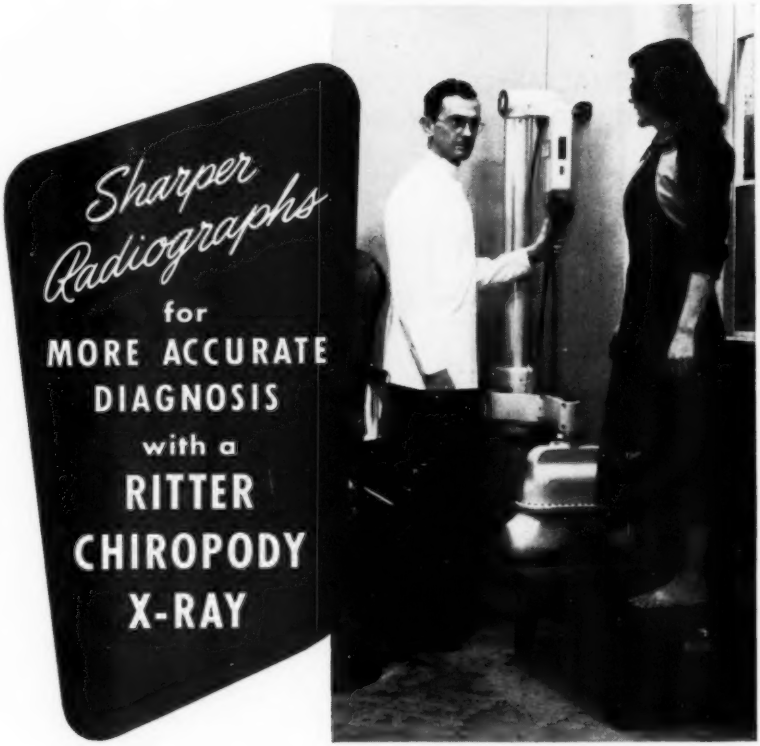

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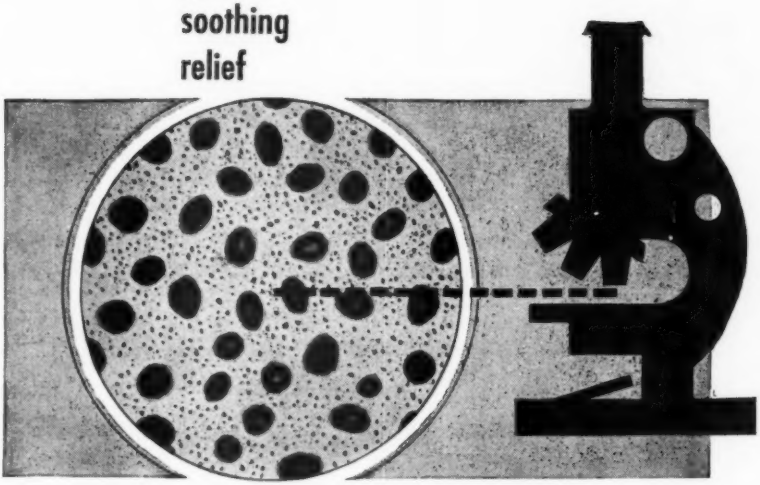

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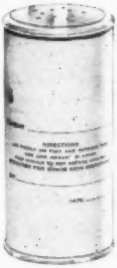

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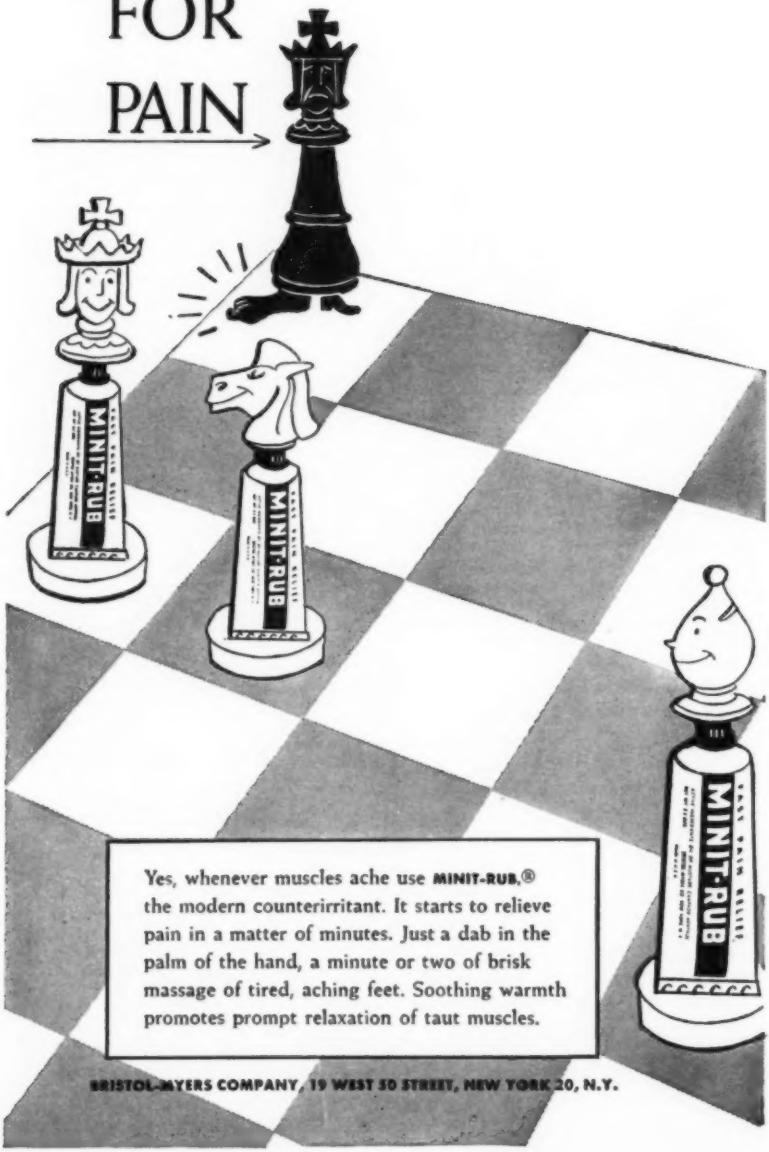

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VOLUME 43 MARCH, 1953 NUMBER 3

PATHOGENESIS OF FOREFOOT DISEASE

Cause, effect, and treatment of some structural deformities involving the metatarsal heads

MILTON HENENFELD, Pod.D.
New York, N. Y.

Part One (to be concluded in April issue)

For a better understanding of the function of the metatarsal heads in relation to the remainder of the foot, and especially the toes, and of the pathologic changes which may take place in or to them, a re-evaluation of the role played by the metatarsal heads in the normal foot has been deemed essential.

For the purpose of this study the metatarsal heads were critically examined in their structural and functional aspects. Structural considerations included the size, shape, and length of the metatarsal bones as well as the trabecular pattern and density of the bony structure. Functionally the metatarsal heads were examined from the point of view of the foot in the standing position as well as in the various phases of locomotion. Particular attention was given to the position and function of the metatarsal heads at the moment of "take-off" during propulsion. It was felt that it is at this point that the metatarsal heads alone bear the brunt of body weight. In high-heeled shoes, for instance, the foot is *constantly* maintained in the "take-off" position, the metatarsal heads bearing the body weight without respite, a state they were not meant to assume. In this study it soon became evident that the toes must be included in any approach to function of the metatarsal heads. Both anatomically and physiologically these two structures are an integral part of one mechanism and therefore any disturbance of one is bound to affect the other. The functional importance of the toes in this relationship has been underestimated in the past. A review of the literature, visual study of a series of feet both in the standing position and during locomotion, and the examination of roentgenograms taken of normal (asymptomatic)

feet and abnormal (symptomatic) feet is the basis on which the re-evaluation has been made.

This paper will discuss only the normal and pathologic findings of the structural aspect of the metatarsal heads.

Function of the Metatarsal Heads

From the studies it was determined that the metatarsal heads have three major functions.

1. Balance: They permit the foot to balance itself against the ever-changing gravitational axis of the body.

2. Weight Transmission: They accept the weight from the rearfoot preparatory to the action of "take off."

3. Fulcrum: They act as a fulcrum during the "take-off" phase of propulsion. (Lever of the second order.)

It was further determined that there is no need for an arched structure at the metatarsal heads. That the toes play no part in actively propelling the foot. They may play an indirect part in altering the direction of the "take-off." That the lengths and relative lengths of the metatarsals determine in what manner the foot shall be propelled during the final "take-off." That the "take-off" under normal circumstances does not occur in the same manner at all times, that is, off the great toe or between the first and second metatarsal heads. That alteration in the structural relationships of the lengths of the metatarsals and interference with their functional ability as the result of segmental structural alterations will produce abnormal metatarsal head function.

BALANCE. The ability of the metatarsal heads to balance themselves against the ever-changing gravitational axis of the body is a necessary role in foot function. There are three mechanisms in the foot which play an active role in foot balance: the sub-talar joint, the inner arch, and the metatarsal heads.

The sub-talar joint with its great degree of available motion is employed mainly in the extremes of foot balance in order to prevent the foot from turning over. Supination and pronation are required when an individual steps upon an unstable surface or walks on the stilt of a high-heeled shoe. Were these motions not possible, walking, except on smooth flat surfaces, would be a hazardous affair.

The second consideration in foot balance is the inner arch. This structure because of its flexibility permits the foot to be balanced upon the outer stabilizing arch structure. It removes some of the burden from the sub-talar joint and aids the metatarsal heads in their function as a balancing agent.

The third, and by far the most important of the three factors in foot balance, is the metatarsal heads. They are employed in the finer adjustments of foot balance required in standing and walking. These adjustments take place all the time and not merely upon extreme need. The rear foot is composed of large, compact bones with very little motion possible in their individual joints (excepting the sub-talar joint). The foot in this portion is narrow and offers little base for support and therefore for balancing action. The metatarsals, on the other hand, are long

bones and they fan outwards from the tarsus. The third metatarsal, being an extension of the midline of the foot, is the pivot, the remaining metatarsals radiating from it on both sides. This fanning, with the broadened heads at the ends, forms the wide base so necessary for good balancing capacity. The ability of each metatarsal to move independently of the others further enhances this action. The toes, which are extensions of the metatarsals along the same axial lines (when in normal relationship), also play a role in this capacity for balance.

The greatest degree of disturbance in balance, and therefore the greatest disability, is produced when dysfunction of the metatarsal heads is incurred.

If arthrodesis of the sub-talar joint is effected, supination and pronation cannot be produced. The metatarsals, however, continue to function uninhibited, with resultant minimal reduction in foot function. Fine adjustment in balance is required much more frequently than the extremes of balance supplied by the sub-talar joint. In fact, during locomotion the sub-talar joint is locked (Jones), indicating that the other factors are sufficient for proper balance. Therefore even with the sub-talar joint immobilized, walking or standing upon level surfaces will not be materially impaired. There is no doubt, however, that a greater burden will be placed upon the metatarsal heads under such a condition. If, with the arthrodesis of the sub-talar joint, the functional ability of the metatarsal heads is impaired or destroyed, there would be very little balancing ability present in the foot.

Removal of the functional ability of the metatarsal heads leaving the sub-talar joint intact would result in maximal impairment of foot balance. The sub-talar joint will, out of necessity, assume the responsibility for maintaining balance. Normally this joint should be locked during locomotion, hence its employment to maintain balance will interfere with proper foot function. Furthermore, its movements to control balance, because of the nature of the joint, would be gross, with no fine adjustment possible. Standing with the weight on one foot is an accurate test for balance capacity (Hiss). Whereas the foot normally should remain flat on the ground with only slight movement of adjustment present, with impaired metatarsal head function, the foot pronates and supinates in varying degree in the attempt at balance. At times, the patient is unable to maintain balance at all.

The inner arch which may be expected to take over the burden of the dysfunctioning metatarsal heads cannot do so because it is inextricably bound with both the metatarsal heads and the sub-talar joint, being in part formed by both. Its anterior portion (metatarsal heads) cannot function properly and its posterior portion (heel) is overfunctioning.

In the proper balancing of the foot all three forces act in conjunction, the rearfoot for the extremes of balance requirements, the forefoot for the finer adjusting movements, and the inner arch as a tie or "go-between" the two. The metatarsal heads, when they are functioning, allow for finer adjusting movements at the sub-talar joint than would be otherwise possible.

The other factors which play a part in foot balance (muscle tone and reciprocal innervation) are dependent for their action upon the fact that the muscles insert into the bone structure of the foot. The leg

muscles which furnish the balancing power (the inverters and everters of the foot) act upon the bones of the *rear foot only*. There is no motion between the first, second, and third metatarsal bases and their associated cuneiform (Hiss), therefore they may be considered as part of the rearfoot insofar as their muscular attachments are concerned. This means that the action of muscles here attached, as well as elsewhere in the rearfoot, affects movement principally of the *sub-talar joint*. In other words impairment of muscular power, either occurring in the muscles themselves or because of pathology to the structures on or through which they act, will impair balance mainly at the sub-talar joint. Since the metatarsal heads can still function uninhibited, balance is not greatly impaired by this muscular defection. An individual with weak or paralyzed muscles, if he is able to propel himself at all, will be able to maintain foot balance.

The conclusion arrived at is that the metatarsal heads play a more necessary role in foot balance than the other mechanical factors in its production, and that disturbance in their structure or function will produce inability of the foot to properly balance itself upon weightbearing and during locomotion.

WEIGHT TRANSMISSION. In the standing position the body weight is carried upon all the bones of the foot, being transmitted to the ground via the calcaneus, the base of the fifth metatarsal, the four outer metatarsal heads, the sesamoids of the first metatarsal head, the tips of the distal phalanges of the lesser toes, and both phalanges of the great toe. If standing should take place at the conclusion of locomotion then this condition will exist after the weight has been transmitted forward from the heel for the last time. If, however, stance is assumed from the resting position, such as when an individual arises from a seated position and remains standing, then the entire foot assumes the burden at once and there is no forward transmission of weight.

In locomotion there are two factors to be considered in regard to body weight: the *acceptance* of this weight by the foot and the *transmission* of this weight in a manner which makes propulsion possible. This transmission can be accomplished in two ways, either from the heel forward to the forefoot or from the forefoot back to the heel. Toe to heel progression, although not commonly employed, nevertheless does take place under certain circumstances and should be understood.

Heel to Toe Progression

The weight of the body in heel to toe progression is accepted by the calcaneus, and the shock is absorbed *by this bone alone*. The bone structure of the calcaneus, its shape, its consistency, and its trabecular pattern permit this action. No arch structure anywhere in the foot plays a part, or assumes responsibility for the absorption of this shock since *no other foot structure* is in contact with the ground at this time. Directly after the heel has assumed the weight of the body, the remainder of the foot comes in contact with the ground. Since there is no longer the need for shock absorption (the calcaneus has provided for this) all that is required of the foot from this moment on is the ability to transmit this weight from the rearfoot to the forefoot so that the latter can be in position to assume its responsibility in the final stage of locomotion, the take-off. This

transmission must be free from all shocks and jars which may interfere with the important function of balance. The longitudinal arch of the foot plays no part in shock absorption in this manner of walking but acts as a weight transmitter. Since the shock of the body weight has been accepted and completely absorbed by the heel and since the weight has been transmitted smoothly and evenly to the metatarsal heads by the fluid action of all the bones and joints of the foot, there is no necessity for any further shock absorption in this or any other portion of the foot.

Even in the toe to heel progression there is no necessity for a shock-absorbing structure at the metatarsal heads. In this form of locomotion where the forefoot strikes the ground first with the weight being transmitted back to the heel, there is one important difference from the more common mode of walking. When the forepart of the advancing foot strikes the ground, the other foot remains upon the ground continuing to bear body weight upon itself, and only when the entire advancing foot has made contact with the ground is the rearfoot raised and the weight transferred completely to the advancing foot. Under these circumstances then, only partial weight is accepted on the metatarsal heads which then transmit the weight back to the heel. The individual action of the metatarsals is sufficient to absorb the gentle shock of their first contact with the ground. They are not confronted with the impact which the heel receives in heel to toe progression.

In heel to toe progression the weight is transmitted forward from the heel by *all* the foot structures, by every bone and ligament in the foot, therefore both the inner and outer arches transmit weight to the forefoot, each carrying its quota of the load. The inner arch resting upon the outer simply transmits its weight through it to the ground (when the outer arch is in actual contact with the ground). In order to demonstrate that the inner arch has the ability to carry weight forward without the aid of the outer arch, or of the ground itself, simply walk with the heel and ball of the foot touching the ground and the outer arch completely raised. Were weight, in this manner, not being transmitted through the inner arch (as well as the outer) locomotion would be impossible. The pes cavus foot is sufficient evidence that the weight need not be transmitted via the outer arch alone.

In transmitting the weight forward from the heel we have been hitherto led to believe that the outer arch is the only important feature in this process and that the weight was carried from the heel along the outer border of the foot to the head of the fifth metatarsal and then across the forefoot to the head of the first metatarsal. This line, drawn from the heel to the first metatarsal may be termed the "curve of ground weight transmission." (Fig. 1). This curve is merely a *descriptive line* which illustrates the manner in which the weight of the foot is transmitted *to the ground*, and nothing more. The belief that the weight is transmitted forward in the pattern of this curve is incorrect. It was determined in actuality that the weight is transmitted along a *straight line* in a transverse axis to the ankle joint, running through the center of the foot and passing forward through the head of the third metatarsal. This may be termed the "line of functional weight transmission" (Fig. 2), and is synonymous with the functional axis and the leverage axis of the foot. The functional axis of the foot is the plane in which movements occur at the ankle joint and is obtained from the direction of the articular surface

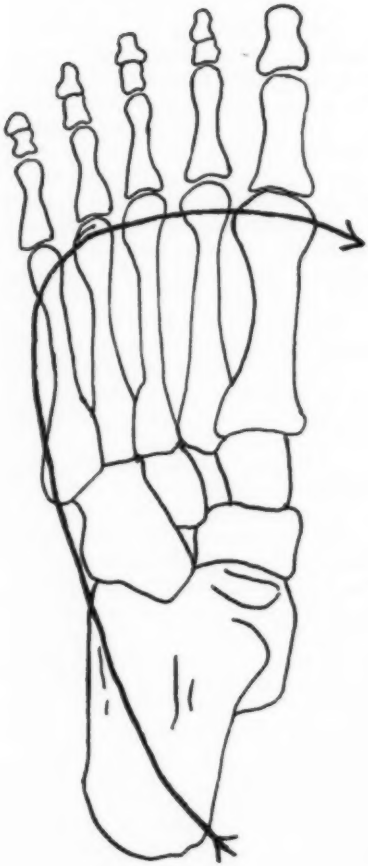

Fig. 1. Curve of ground weight transmission

This article will be concluded in the April, 1953, issue of the JOURNAL.

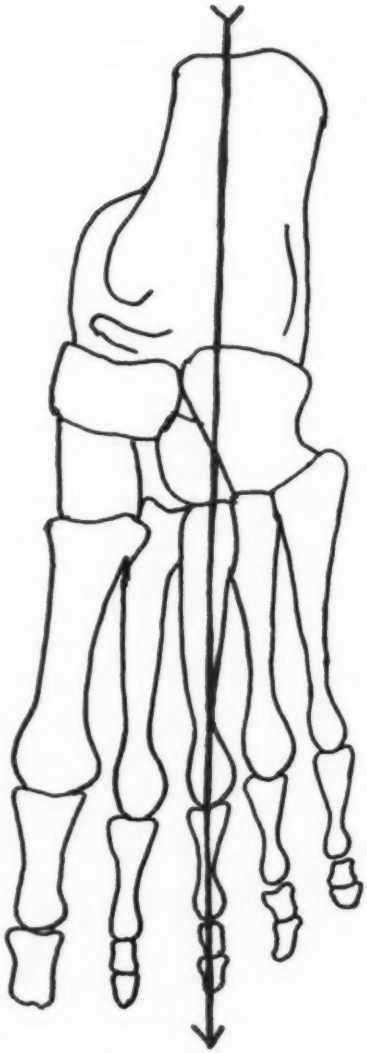

Fig. 2. Line of functional weight transmission

of the astragalus (Lake). The functional axis takes place in the direction in which the body is moving. The leverage axis is a line through the longitudinal axis of the foot following the propulsive effort. The functional axis and the leverage axis in the human foot should be identical so that leverage action may function at its optimum. This axis is a line at right angles to the midline of the foot passing from the center of the astragalus forward through the head of the third metatarsal. The leverage axis remains constantly through the third metatarsal. The functional axis or the "line of functional weight transmission" may vary depending on the position of the foot in relation to the leg during weight acceptance and transmission, and also during "take-off." It is this line which is of greatest importance in determining the manner in which weight is transmitted from the heel to the forepart of the foot, for upon actual motion the foot does not undergo a curve but follows a straight line from heel to toe in the same direction as that of the locomotor action of the body. *If the direction of the weight in the foot runs differently from the general direction in which the foot is propelled, strain in some manner must inevitably result.* The significance of this functional axis lies in the fact that the five metatarsal heads must now be considered to strike the ground *at the same time* rather than singly from the fifth to the first as previously believed. This action is accomplished because the inner and outer arches bear their load of weight. When both the inner and outer arches touch the ground (flattened foot), then the lines of "ground weight transmission" and the line of "functional weight transmission" are identical; the straight line running through the foot, but not necessarily running through the third metatarsal head. The line of functional weight transmission illustrates in what manner the weight is carried forward despite how it is transmitted to the ground.

Weight transmission has now been followed from the heel directly forward to all the metatarsal heads and thence to the toes.

FULCRUM. The foot is now ready for the final phase of its function in heel to toe locomotion; the "take-off." With the five metatarsal heads held in direct contact with the ground, the heel is now raised and the foot assumes the "take-off" position. Heretofore we have been led to believe that the "take-off" is done in the following manner. The weight of the body is moved forward along the functional axis of the foot (this axis has been described by various authors as passing between metatarsals one and two, between metatarsals two and three, or passing directly through the third metatarsal); the leverage axis is between metatarsal one and two; and the "take-off" occurs at the great toe, directly forward off metatarsal heads one and two.

Based upon these facts it has been believed that the weight is carried forward from the heel to the outer border of the foot then across the metatarsal heads from the fifth to the first where the weight is shifted to the inner border of the foot and finally pushed off by the great toe between metatarsals one and two. This description, however, does not agree with the present findings.

Metatarsal Head Ratio

The five metatarsals flat on the ground in the "take-off" position, and in normal relationship with one another, have a distinct structural arrangement insofar as their forward extension. The metatarsal head ratio considered most typical of human beings is 2-3-1-4-5. The second metatarsal head extends farthest forward in all cases, the third is shorter than the second and is followed by the first, fourth, and fifth, respectively. There are variations of this ratio but the second is invariably the longest. *When any of the other metatarsals extend beyond the second they are to be deemed abnormal.* In regard to the first metatarsal, the actual amount of forward extension must be tempered by viewing the sesamoid bones since they determine the pivotal action of this bone.

Since the second metatarsal is the longest in the foot in any action involving movement across it, such as its being raised during the "take-off," it would become the fixed point (fulcrum). Since by itself it is structurally unable to push off the body, it is quite clear that it must act as a pivotal point upon which the remainder of the foot turns. The weight must be shunted to areas more capable of pushing off the body weight. Therefore with the weight transmitted forward along the functional axis of the foot and with the five metatarsal heads in contact with the ground, one of two possible actions can take place when the forefoot is raised for the "take-off." With the weight moving forward over the metatarsal heads, and with the second metatarsal as the fulcrum, the foot may either pivot *medially* off the first and second metatarsal heads (medial pivotal action) or *laterally* off the second, third, fourth, and fifth metatarsal heads (lateral pivotal action) (Fig. 3). This infers that the foot has the ability to leave the ground in one of *two* directions, both of them at an angle to the leverage axis of the foot. The "take-off" does not therefore exclusively occur between the first and second metatarsal heads and certainly not directly forward.

Morton insists that the "push-off" takes place between the heads of the first and second metatarsals (his interpretation of the functional axis of the foot) and claims that with the five metatarsal heads on the ground, the weight is thrown to the inner side of the foot by the action of the outer metatarsals. He offers no explanation as to what produces this action.

I find no scientific basis for assuming that weight is thrown off in a straight line between metatarsals one and two. Schuster states that "as the foot is lifted into extension at the metatarso-phalangeal joints it rises first on an oblique line that extends from the head of the second metatarsal bone outward to the head of the fifth metatarsal bone. When the limit of extension is approached the fibula slides backward on the astragalus, the rear-foot turns slightly inward at the mid-tarsal joint, and the weight is shifted to the head of the first and second metatarsal bones for the final 'push-off' by the long flexor muscle of the great toe." There is some doubt that the fibula slides backward on the talus and it is more likely that the weight would be shifted toward the *outside* of the foot rather than inward since, with the foot in extreme extension, the mortise of its joints places it in a position of inversion, thus throwing the weight to the outer border of the foot.

There is a school of thought in reference to locomotion which believes that the part played by the musculature in actually propelling the foot is only an incidental one. The principal muscular action is the maintenance of balance insuring that the foot will be held in the proper position at the proper time when weight is being thrust upon or passed through it. They believe that walking is initiated by the forward tilt of the trunk and that the remaider of the process is simply the adjustments of the various parts of the body in maintaining its balance against the force of gravity. Forward momentum having been created, it is maintained without the employment of muscular power. One of the chief arguments in favor of this theory is the fact that walking can be accomplished smoothly and evenly with the use of an artificial limb. Only by close observation can one determine that an artificial limb is being employed. The limb is stabilized by the fact that it is one solid piece. In the human organ like stabilization is produced by its musculature, which immobilizes the moving portions, producing a solid piece of machinery which functions as automatically as the false one. Since an artificial limb can function with almost human effectiveness, without a mechanism for push-off, it indicates that metatarsal heads and toes are not essential for this process. Therefore it may be said that normal progression carries the foot over the metatarsal heads with such sufficient forward momentum that no *push-off* is required.

It is to be remembered that the other foot is already on the ground at this time. Actual push-off takes place when the step is so long that the other foot does not reach the ground in time, and therefore the added

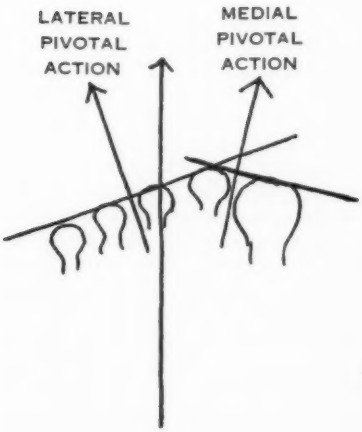

Fig. 3. "Normal" pivotal action during "take-off"

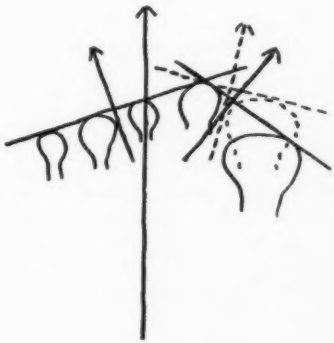

Fig. 4. Short first metatarsal. Medial pivotal action affected

push is necessary to maintain the forward momentum until such time as the other foot can assume its role in the action of momentum. If this theory is valid then the consideration that the toes, both the greater and lesser, play a part in actual pushing off of the foot is a false one. This means also that they play no active part in determining how the weight shall be thrust off the forepart of the foot. Furthermore since the toes play no part in controlling the direction of the push-off, it is impossible for the "take-off" to occur in a straight line off the great toe. The axis formed by the first and second metatarsal heads thrusts the weight off medially.

There is ample proof that the great toe, and the lesser toes, take no active part in the "take-off." During all phases of locomotion the great toe is flat on the ground, neither in flexion or extension. This indicates either that both the long flexor and extensor muscles are active, or that they are not functioning at all. According to F. Wood Jones they *are active,* "and the great toe is held firmly to the ground as a lever so that the lesser toes may function in their own peculiar manner." At the time of "take-off" it becomes apparent that this condition of muscular action on the great toe can no longer conceivably exist for after the leg has been drawn forward on the foot by the action of the extensor longus digitorum muscle and the heel is being raised, there *must be relaxation* of the long flexor and extensor muscles of the great toe. For if the long flexor continued to function, it would prevent dorsi-flexion at the metatarsophalangeal joint and the foot would rise, not upon the metatarsal head, but upon the great toe. Of course this does not occur, therefore the flexor muscle cannot be active. If the extensor longus hallucis muscle were to remain functioning at this time then dorsi-flexion of the great toe would take place. As this too does not occur there is no action of this muscle. Therefore, there cannot be any muscular action on the great toe at the time the foot is being raised on the metatarsal heads. Stabilization of the forefoot is maintained by the interossei and lumbricales muscles, as well as other intrinsic muscles, which act on the toes without interfering with flexion or extension. When the weight is about to leave the metatarsal heads, both Schuster and Jones claim that the great toe aids in the final push-off. Schuster states that the long flexor muscle of the great toe is the final factor in the push-off. We have attempted to show that the muscle is not functioning at the time and, therefore, this action is impossible. Assuming, however, that at this particular moment the muscle should contract, its action would be to extend the leg on the foot. However, since the toe is dorsi-flexed on the metatarsal head, contraction of this muscle would tend to lift the metatarsal head off the ground, and this indeed would be an actual push-off. And upon demonstration such a movement is possible. It is inconceivable though to consider that by itself, the great toe, as large as it is and with its comparatively weak flexor muscle, can bear the thrust off to the body weight. The pressure of the body in walking is increased to as much as 45 pounds in rapid walking and this pressure is further increased with the length of the step. Upon actual observation there is no apparent gripping of the ground by the great toe at such time to indicate functioning of the long flexor muscle. It will be noted that the great toe rests flat upon the ground without undue pressure at any time during the step indicating that the toe

is not actively flexing against the ground. The fact that the great toe and its metatarsal are the largest of the metatarsal group is no indication of its importance in the "take-off." Physiologically it may be larger because there are only two metatarsal heads involved in medial pivotal action whereas there are four in lateral pivotal action, both action bearing the same amount of weight. Phylogenetically, the first metatarsal and its phalanges are the largest.

Jones enunciates the importance of the great toe in the following manner. Since the second metatarsal is the longest of the metatarsals, the push-off would of necessity be borne on this bone. In order to circumvent this action the great toe, through its leverage action, permits the weight to be carried off by itself. It is interesting to note that Jones, too, considers the second metatarsal incapable of pushing off the body weight.

It is to be assumed then that at the time of "take-off" the great toe is still being held firmly to the ground by the action of its muscles, for it is only in this state that the great toe may act as a lever. A lever is a rigid structure turning freely on a fixed point (fulcrum) and serving to impart pressure or motion from a source of power to a resistance. Therefore, the great toe as a lever would have to turn upon the second metatarsal head as the fulcrum and force the foot obliquely off the outer metatarsal heads. In other words, lateral pivotal action. The great toe, as a lever, *cannot thrust the weight off upon itself.*

The lesser toes play no part in the "take-off" action either. With the foot flat on the ground the lesser toes "dig in" or become clawed by the combined action of their long and short flexor and extensor muscles. This is in preparation for an important function in which the lesser toes take part. Before the heel can be raised it is essential that the leg be brought forward on to the foot else the heel would be raised with the knee stiff which would then raise the body directly upwards and not in the direction of the forward motion. This flexion of the leg on the foot is accomplished by the extensor longus digitorum muscle which originates its action from the toes since the toes are firmly fixed to the ground. Since, however, the long flexor is in contraction at the same time (to permit the toes to grip the ground) such a forward motion of the leg would be impossible without their relaxation. This is made possible by the flexor accessorius muscle which, taking over the task of the long flexor, holds the toes to the ground, thus freeing the long extensor, permitting it to bring the leg forward on the foot. Once this is accomplished there is no further necessity for any actual toe action other than that of stabilization, which is accomplished by the interossei and lumbricales muscles. These muscles act upon the toes without interfering with, and without the aid of the long flexors and extensors. For if the heel is to be raised by the action of the triceps surae and the metatarsal heads are to assume their function, like the great toe, the flexors must be relaxed if dorsiflexion at the metatarso-phalangeal joints is to be obtained.

Bearing these facts in mind, it can be specifically stated that once the heel is raised there is no action played by the toes in pushing the foot off in locomotion. Since they play no part, they do not directly alter in any way the medial or lateral pivoting action which takes place at the metatarsal heads owing to their structural formation. If we are to assume

that actual muscular contraction is required to push the foot off the ground, or when such action is actually needed, as in a long step or in running or jumping, the muscles involved are the powerful triceps surae (not the long flexors) and the action takes place off the metatarsal heads and not the toes.

It has been determined that normal function during the "take-off" phase of locomotion (after the weight has been carried along the functional axis of the foot to the metatarsal heads) is a pivotal action off the second metatarsal head either medially or laterally. This angulated leverage action takes place *freely in either direction,* the action depending upon the condition which confronts the foot at the particular time.

Offhand it would seem that such medial and lateral pivot action would not be conducive to the greatest amount of efficiency for foot action during this phase of locomotion. This would appear to be because the leverage action is not in the same plane as the functional axis of the foot. However, upon close examination certain advantages manifest themselves which justify the existence of these pivotal axes.

Medial and lateral pivoting action permits the understanding that the foot *can, and does,* thrust off in two different directions rather than only in one. This action divides the burden between both sides of the foot rather than concentrating all the thrust off upon the first and second metatarsal heads. Normal locomotion does not always take place with the foot pointed directly ahead and therefore it is essential at times that the foot be rotated inward or outward. Medial and lateral pivotal action permits the weight to be thrust off without disturbing the balance or interfering with functional efficiency when this rotation does occur. When there is a sudden change of direction of the body movement with the foot still pointed in the direction of the original motion, pivoting action can take place medially or laterally to provide for this new change of direction. The condition of the ground being walked upon will alter the angle of take-off. Uneven, slanting, or sloping surfaces will determine the direction of pivotal action. Lateral shifts of body weight during normal locomotion will influence the pivotal action during the take-off.

It is apparent therefore that for the most efficient functioning of the foot the leverage action of the foot during the "take-off" *is not coincident* with the functional axis of the foot.

Structural Abnormalities of Metatarsal Head Length

Certain pathologic considerations occur which alter the pivotal action to such an extent that normal function is interfered with and symptoms result.

It has been stated that the most typical metatarsal head length in humans is 2-3-1-4-5. Other ratios given are 2-1-3-4-5 and 2-1=3-4-5. Any deviation from the above formulas will produce abnormal function. In studying roentgenograms, the normal metatarsal head relationships must be continually borne in mind. Unless this is done a short first metatarsal head may be diagnosed when actually the condition is an abnormally long second metatarsal.

In all the following structural abnormalities (Figs. 4 to 15)* the foot is considered to be pointed straight ahead unless otherwise indicated.

*Figures 5 to 15 will appear in April issue.

The type of pathology produced by these structural abnormalities is very much the same, differing only in locale. The increase in pressure upon the various metatarsal heads produces tyloma and (when there is impaction or compression added) heloma beneath them. Burning sensations and pain are concomitant symptoms, their severity depending upon the degree of abnormality, the number of bones simultaneously involved. and the amount of pressure brought to bear on them.

The Short First Metatarsal (Fig. 4)

Before discussing this abnormality, it is to be recalled that the weight carried by the bone is transmitted to the ground via its sesamoids, which become the pivoting point of its action during the "take-off." Thus the position of the sesamoids rather than the actual length of the metatarsal head should be the determining point in measurement.

Morton's functional first metatarsal is one in which its length is the same as the second, for in this manner the functional axis and the leverage axis of the foot will fall in the same line; between the heads of the first and second metatarsals. This is the ideal foot from his point of view; however, both statistics and practical experience show that it is an ideal and not an actuality. For even if the bones are the same length, the sesamoids, which are always posteriorly placed on the head, will make the first metatarsal head shorter than the second functionally. Hiss has also demonstrated the inconsistency of Morton's declaration. For if Morton is correct, then *all* first metatarsals are short since the second has been shown to be the longest in all cases. This is no denial that short first metatarsals do occur, but when they do, they are shorter than the normal relationships which have been established above.

A short first metatarsal occurs when either the entire metatarsal is short or when the sesamoids are abnormally placed posteriorly. It is to be remembered that in the typical human foot the first metatarsal is longer than the fourth and fifth. If these two latter bones are in proper relationship as to length, and the first is much shorter than either, or both, or if the sesamoids are so placed posteriorly that they fall into position posterior to the heads of the fourth and fifth metatarsal bones, then the first metatarsal is considered short. This abnormality will produce an *increase* in the medial pivotal angle; therefore, when medial pivotal action occurs, more weight will be thrust upon the head of the first metatarsal with increase of weightbearing on the great toe. The result is symptomatology beneath the first metatarsal and the great toe. When the foot action continues its attempt to throw the weight forward, since the medial pivotal action has been materially disturbed, metatarsal one cannot bear its share of the weight and the second metatarsal must carry more than it is able to. The result is dysfunction of the second metatarsal.

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TECHNIC FOR FABRICATING TOE SHIELDS—INTRODUCTION

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Lewistown, Pa.

This is the first in a series of articles in which will be described prosthetic fabrication technics.

As opposed to construction details, the case or condition application may be vague. For it is our contention that specification as to usage will not stimulate new and different methods or uses. In return, we will appreciate learning of the undoubtedly numerous, excellent ideas that you may evolve from our (or your own) suggestions.

This paper is concerned with a technic for a flexible type, soft vehicle for toe shields and other uses.

Our profession knows a great deal about latex shields since a number of chiropodists accomplished the original work on these prostheses. There are many individual practitioners and laboratories who fabricate them exceedingly well on plaster models of the toes.

We are all familiar with the relative differences that occur in the contours of the toes when they are compressed, to a greater or lesser degree, by the shoe as opposed to their shape in an exposed position necessary for taking an impression. Despite the excellent detail that can be reproduced by the elastic impression materials, the positive reproduction of the toe is not equivalent to the functional proportions of the digit in the shoe.

Even the clever and ingenious methods of using the alginate and colloid dental impression materials to make a negative while the toe is in the shoe cannot reflect, with absolute fidelity, the toe in question because the irregular mass or the unknown thickness of the negative material itself causes displacements and compressions of the soft tissues that are not normally present and could not be reproduced by the digital prosthetic made on the positive of such an impression.

It must be realized that a functional impression of a toe also includes its position within the space of the shoe. As we will discuss in a later article, even with the use of a dynamically-formed toe shield (that has been worn by the patient with satisfactory results) as the mold, a shield cannot be produced from another material that has a different density than the original dynamic mold material.

Minute differences in the compression of adjacent soft tissues that will displace the toe can be exceedingly detrimental to the successful function of a digital shield.

Many of us have realized the necessity of dynamic fabrication of toe shields. It became obvious that the most consistently successful fitting and function of digital shields was achieved when (a) the negative impression mold of the dynamic toe became the actual prosthetic without an intervening positive or (b) the material applied to the toe was sufficiently elastic or yielding to accommodate to the counterpressure of the shoe itself, changes in contour of the toe when put into the shoe,

The latex compounds referred to in this paper were supplied by The Alco Oil and Chemical Co., Philadelphia, Pa.

and/or the modifications of both factors produced by the torsions of locomotion.

The dimensional changes permissible in the materials used in the latter process based on certain empirical experiences, constitute the same rationale as the usual moleskin, felt, etc., padding applied to a toe. The clever use of elastic, self-adherent rubber sheet materials allow a refinement of that process to produce toe shields that are removable and replaceable.

Even better was the idea of applying numerous non-continuous strips of self-adherent gauze to the toe, incorporating a shield, and then by allowing the patient to walk, a more dynamic model of the toe was reproduced than the arbitrary placement of material, which would not allow much adjustment to the contours of the toe in the shoe. Then this dressing, equivalent to a negative impression, is removed, and by dipping it into latex, a semi-permanent, semi-dynamic shield is evolved.

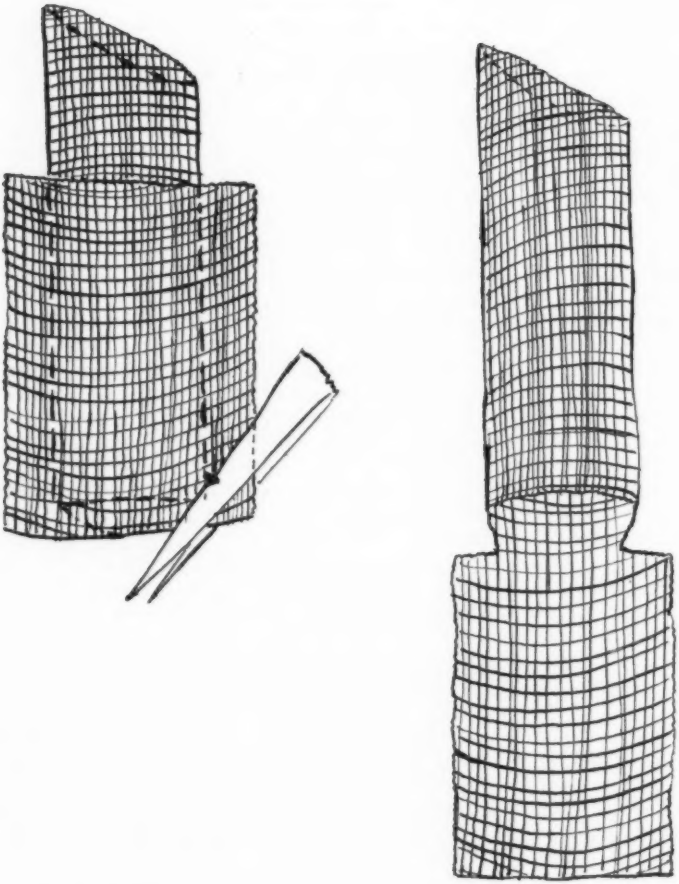
Although all the procedures of this type possess definite merit, there are certain inherent disadvantages:—(1) a greater or lesser amount of restraint, despite the "give" of the materials used, to prevent the toe from assuming its most normal position, (2) certain necessary distortion of the attained impression to permit removal for latex coating (the initial temporary use of a piece of moleskin on the medial or plantar surface of the toe was advocated as an arbitrary spacer to facilitate removal and to compensate for the following latex coat), (3) unknown and unpredictable contour alteration by the latex coating and its shrinkage upon curing, (4) certain disadvantage, either psychological or dermatological, of the skin-rubber intimacy.

Using a simple technic, we have produced dynamic, removable, semi-permanent prosthetics that specifically eliminate the objections outlined above and are in complete accord with the requirements for this type of mechanical therapy.

Liquid latex is an aqueous dispersion of natural or synthetic rubber, with certain added ingredients to modify the properties of the liquid compound or the resulting rubber product. The liquid is preserved, or stabilized with ammonia water, usually. The escape of the alkaline NH_3 gas from the solution allows the latex to set and cure. This volatile ammonia can diffuse into the air above the liquid, or be chemically withdrawn by the addition of an acid to the latex suspension. The acid also affects the state of the latex itself. We are all familiar with the use of an acid as a coagulant of liquid latex.

In the industrial process of the manufacture of rubber gloves and other dipped goods, latex coagulants are used. They are of two types, i.e., volatile and non-volatile. In this process, forms or molds of the desired object are dipped into a vat of liquid latex to be withdrawn and thus produce such objects as rubber gloves. The use of the coagulants in volatile solvents increases the thickness of each coat acquired in the dip and reduces the necessary interval between dips.

The molds may be dipped into the non-volatile type $Ca(NO_3)_2$ coagulant first. The coagulant solvent is allowed to evaporate, leaving a uniform deposit of $Ca(NO_3)_2$ dry on the mold, then it is dipped into the latex. The volatile coagulant is used after the latex dip, with or without the first $Ca(NO_3)_2$ dip.



Left—Slit tubular gauze beyond toe. Trim excess along edges as desired, cut gores at the line of fold.

Right—Fold back over toe. Trim obvious excess. After initial application of latex, other extra corners could be snipped, then redabbed with latex.

It becomes apparent that the $Ca(NO_3)_2$ once deposited on a form, will retain its activity until dipped into the latex, whereas the acetic acid effect is transient. Generally speaking, the $Ca(NO_3)_2$ is a "before" coagulant, acetic an "after."

Calcium nitrate is used in an ethyl alcohol solvent with a dispersing agent to insure a uniform deposit of the salt on the dipped form, when the solvent evaporates glacial acetic acid is mixed with ethyl alcohol, both components being volatile (formulae for the coagulants follow):

A. $Ca(NO_3)_2$	15%-25%
Areskline (Monsanto Chem. Co.)	0.1% (dispersing agent)
Ethyl Alcohol	q.s.
B. Glacial Acetic Acid	10%-40%
Ethyl Alcohol	q.s.

The alcohol should be a good grade of denatured ethyl alcohol, preferably about 90% ethyl, 10% methyl with a small quantity of pyridine if necessary. Under no conditions should acetates, benzol, or petroleum distillates be present in the denaturants because the coagulant picks up water from the latex and the addition of a small quantity of water to the coagulant makes the benzol, petroleum, etc., insoluble in the alcohol, forming a thin film on the surface, thus ruining the coagulant. A coagulant prepared with good alcohol will last for years. Of course, it has to be replenished regularly.

Procedure

We have modified the commercial procedure and use the coagulants in the following manner. A length of tubular gauze of suitable size is previously dipped into (see "A" on illustration) and the alcohol allowed to evaporate. The tubular gauze is cut on a diagonal curve to fit the contour about the base of the toe and then a length cut off, sufficient to go back over the toe. The weave of the tubular gauze will allow a neat snug conformity to the contour of the toe without constriction. The proximal end of the gauze over the toe can be held flat to the dorsal aspect of the base of the toe with a small dab of (Vulcanol Adhesive W-3064A), or a piece of two-sided tape (No. 400 Pressure Sensitive Tape, Minn. Mining & Mfg. Co.) if desired.

There is no need for the "half twist" knot at the end of the toe. Either the distal half of the surgitube can be brought back over the toe unopened; or in a manner similar to the prepared skin flap of an amputation stump, the cut of the tubular gauze will allow it to be brought back over the toe for a smooth end. This flap usually covers the desired shield for the lesion. The shielding material, covered by the coagulant impregnated gauze, will not be exposed to the latex and will not require any special sealing to prevent it absorbing latex and becoming a relatively hard solid piece. Thus the choice of the padding material resides in its own inherent properties according to your preference for the condition.

Application of the latex (Vulcanol XC1386), using a small brush whose bristles have been thoroughly moistened with a liquid soap, then wiped "dry," is a satisfactory method that requires but little practice to produce the desired results.

The immediate, but limited action of the coagulant on the tube gauze, will "set" the latex. Accordingly, the loose ends of the flap can be

"cemented" in place first by application of latex over its edges, followed by covering the other surface of the gauze. There will be no strike through of the latex to the epidermal surface.

Then using (see "B" on illustration) with a dropper, the outer layer of the latex can be coagulated. Within seconds, the volatile solution will evaporate. This can be ascertained by the loss of the shiny effect of the liquid on the surface of the latex.

Application of a little powder and the hose and shoes can be applied. The limited action of the $Ca(NO_3)_2$ on the surgitube and the judicious use of the volatile acetic acid will produce a set of the latex film that will allow ambulation under normal coverings and circumstances. However, the latex will require some time for actual cure. During the interim a dynamic prosthetic will evolve.

The vehicle itself can be as thin as a single layer of tubular gauze without any rubber contacting the skin. It is mechanically very simple to apply and can be applied almost as quickly as the conventional toe dressing. Any slight irregularities can be snipped away as they are seen, and after a few hours, if desired, the entire shield can be removed and the proximal edges trimmed neatly. Desired modifications and additions can be quickly and simply made.

The variations of this basic coagulant technic are legion. Suggested applications begin with the possibilities of all-latex impressions without use of tubular gauze.

Either by brush application, or suitable sized basins, the coagulants and latex can be applied. Of course, these cannot be dynamic models, but could serve for various purposes. Made on the opposite foot or toes, then turned inside out, they could easily serve as the basis for prosthetic restoration of missing parts of toes and/or foot. Their utility for an occlusive dressing, or the maintenance of a continuous wet dressing would be other possible applications.

The procedure for such an impression would begin with the non-volatile coagulant applied to the foot by dip or brush. Previous application of a water soluble preparation such as a massage lotion (not containing chemicals detrimental to latex) to the part might enable a heavier deposition of $Ca(NO_3)_2$ with and subsequently thicker film of coagulated latex.

As soon as the solvent has evaporated, the latex should be maintained in contact without motion for about two-three minutes, then dip into the acetic acid coagulant for two minutes. A second "run" might be necessary for a thicker film. After the desired thickness is reached, soaking the part with the latex on, in water as hot as can be tolerated for about 30 minutes and/or the use of an infra red lamp will reduce the delicate condition of the latex form so that it can be removed from the part to be cured. This can be accomplished by 30 minutes in an oven at 250°-300° F. or 24 hours at room temperature.

This entire process can be accomplished much simpler by the use of some matrix or reinforcement for a model of the foot. Tubular gauze, or even better, a nylon stocking could be impregnated with the coagulant beforehand, and the procedure would then be identical to the tubular gauze technic for a toe.

Gauze bandage technics could be evolved. The use of the coagulants would enable felt to be surface-coated with latex for hygienic reasons after a shield or crest was formed from it. With a short length of wide tubular gauze, a sling could be made to hold a toe crest or any other type of empirical or dynamic object of mechanical therapy. Retention of dynamic rigid plastic prosthetics could be facilitated.

The list is as lengthy as your imagination is active. Chiropody has the greatest clinical experience with the majority of lower extremity conditions that adversely affect human locomotion. This is one method of enabling us to apply our broad therapeutic ability and we trust you will use it.

The author wishes to acknowledge the assistance of Dr. O. B. Hager of the Alco Oil and Chemical Co. who furnished valuable instructions and a liberal supply of experimental material. Our development of the procedures described was merely the logical sequel of the extensive information provided by Dr. Hager. We also appreciate the aid of H. E. Bruner and A. R. Lewis of the Monsanto Chemical Co., who likewise provided helpful material and advice.

27 N. Brown St.

THE PEOPLE AND THE LAWYERS

In a Class Day address to the graduating class in law at Northwestern University in June, Judge Julius J. Hoffman had a word to say on public opinion of lawyers. A recent poll showed that 60 percent of people questioned did not like lawyers, 56 percent thought their fees were excessive, 51 percent had never used the services of a lawyer, and 79 percent were dubious about the lawyers' honesty.

The Chicago Bar Association in the light of this poll decided to establish a public relations office. Judge Hoffman made this comment: "You, in your future practice, can do something much more fundamental. The best public relations do not emanate from press releases but from the behavior of individuals. The best public relations man for the legal profession is the honest, intelligent, civic-minded lawyer. It is not enough for lawyers to publicize a code of ethics if they violate it or condone violations. It is not enough to cite examples of benefactions and public service if the legal profession does not at the same time make the greatest effort to eradicate abuses and public disservice."

No better text on public relations in a profession was ever written in either the field of law or of medicine. When a profession deserves to be loved by those whom it serves, it gets all the love it can possibly use.

Morris Fishbein.

PARTICIPATE IN YOUR

STATE AND LOCAL

CIVIL DEFENSE PROGRAM

PLASTER OF PARIS CASTS AND SPLINTS

Capt. J. VERNON LUCK, M.C.

THE necessity for good plaster technique is emphasized during war. Great quantities of plaster of paris are being used for both the emergency and definitive care of many wounds. Although numerous cast materials have been recommended as a substitute, plaster of paris is still the most satisfactory cast material we possess.

Each step in the technique of utilizing plaster of paris clinically has been minutely analyzed. Many of the statements made in this article are based on the results of laboratory experiments and clinical studies.[1] In analyzing a large number of defective casts and splints, it became obvious that more of them were mediocre or inadequate because of poor technique of application than because of defective plaster of paris and crinoline. If the fundamentals of good plaster technique are followed, the resulting casts or splints should be strong, durable, relatively light, and free of pressure points.

Analysis of the Setting Process

The setting of plaster of paris is the process by which, through the addition of water, the powdered plaster of paris (anhydrous calcium sulfate) is transformed to hydrated calcium sulfate, a solid crystalline form that exists in nature in large subterranean deposits. Heating the crystalline form (gypsum) drives off water of crystalization and a powder results: $2\,(CaSO_4.2H_2O) \rightleftarrows (CaSO_4)_2\,2H_2O + 3H_2O$. After removal of impurities and the addition of a substance to accelerate the setting time, the plaster of paris is ready for clinical use.

In observing the crystallization process microscopically, the powder granules, on being mixed with water, can be seen moving rapidly about. Soon the granules begin transforming to crystals which also move about. Gradually the motion slows and then a point is reached where the crystals begin interlocking. The phenomenon of interlocking ushers in the second half of the setting process; it marks the end of the fluid stage and the beginning of the solidifying stage. This halfway point is a critical point! It is critical in that the ultimate strength of the cast or splint depends upon a secure interlocking of the crystals, and this phenomenon will not occur if the plaster is materially disturbed following the "halfway point" in the setting process. This observation has profound practical significance. It means that by the time the "halfway point" appears, the cast or splint should be completed and held immobile until the plaster is rigid. The later in the second or solidifying stage the plaster is disturbed, the greater the damage to the strength. Of the experimental casts, those casts bent once after the "halfway point" in the setting process showed an average of a 77 per cent reduction in strength. Changes in position of fracture fragments or joints subsequent to the

From the Orthopedic Section, AAF Regional Station Hospital, Santa Ana Army Air Base, Santa Ana, Calif.

1. Luck, J. Vernon: Plaster of Paris Casts; An Experimental and Clinical Analysis, J.A.M.A., 124:23-29, 1 January 1944.

"halfway point" should be scrupulously avoided. Identifying this critical "halfway point" that marks the onset of the solidifying stage requires repeated observations and differs somewhat with the various brands of plaster; but generally it may be considered as representing that point when the plaster has the consistency of thick cream or paste and its wet glistening character is giving way to a dull dry appearance.

Water in a drying plaster cast in excess of that utilized as water of crystallization evaporates from the surfaces. In thin casts, drying may occur in a matter of hours, but in heavy casts drying may not be complete for many days or weeks, particularly in humid climates. It is important that air be permitted to circulate around the green cast. Heavy blankets placed directly over a wet cast can so disrupt the plaster as to make it rubbery and useless. The use of a cast drier for all heavy casts is desirable; in humid climates it may be indispensable. Casts do not attain maximum strength until dry through and through.

When testing the strength of experimental plaster cylinders by compressing them, water was squeezed out of several of the cylinders that appeared quite dry on their surfaces. It took seven days of drying to be sure that all excess water had evaporated.

The Setting Time

Varying the temperature of the water in which the plaster is soaked produces considerable variation in the length of the setting time, hot water shortening the time and cold water lengthening it. Using water cooled to 40° F. and a soaking time of one to three minutes, the setting time is about three times as long as when the plaster is soaked in water at 125° F. Advantage can be taken of this characteristic of plaster of paris in adjusting the length of the setting time to the cast at hand. In the case of large casts the setting time needs to be considerably longer than is required when only small casts or splints are made.

The use of chemicals such as salt to accelerate the setting time and sugar to retard it must be condemned under most circumstances. Such chemicals frequently impair the strength of the plaster. Altering the temperature of the water and the soaking time is usually a more satisfactory method of controlling the setting time. Plaster that cannot thus be brought to a satisfactory setting time should be replaced by plaster with the correct setting time.

The proper length of the soaking time is generally said to be that time required for bubbles to cease rising to the surface. But with this method the time of soaking is subject to wide variation. Whether bubbles rise from the plaster rolls for a few seconds or several minutes depends on how tightly the crinoline is rolled. If the rolls do not soak completely within one minute, they are too tightly rolled. Dry spots mean the crinoline is rolled too tightly, telescoping means it is too loosely rolled. Soaking the plaster longer than usual and until it is creamy has the advantage of preventing loss of plaster during wringing, but the plaster then has the serious disadvantage of being near the "halfway point" in the setting process and therefore must be very quickly used. Under most circumstances, plaster is best soaked from a few seconds to one minute in water from 70° F. to 95° F.

Not more than six or eight average-sized rolls of plaster-crinoline should be soaked in a given bucket of water, and the bucket should be three-fourths filled. When the soaking water becomes concentrated with plaster of paris, the setting time of the plaster in the rolls then soaked is considerably shortened. The crystalized plaster is one of the most effective accelerators of the setting process. Care should be taken to keep the water as free of plaster as possible and rolls should be placed in the water and removed from it with little loss of plaster. Drain the roll or splint in an adjacent basin rather than into the soaking water and allow the water to drain briefly before gently shaking and compressing the ends of the roll. Forceful compression of a roll immediately upon its removal from the bucket can express out as much as half the plaster content. If a delay occurs during application of a cast and the rolls in soaking pass the "halfway point" in the setting process, such rolls should be, without hesitation, discarded. Their use only weakens the cast.

Technique of Applying Plaster of Paris

In the padding of casts, the trend has been toward the use of a minimum of padding in place of the heavy padding that was once popular. To dispense with all padding is not recommended for the little experienced or in circumstances when the patient will not be under close observation. Padding with stockinet, with or without sheet-wadding, is compatible with excellent cast technique. Excessively thick padding invites pressure and friction points, and movement of fracture fragments. In the series of defective casts studied, painful points occurred more frequently beneath thickly padded casts than beneath casts with thin padding. When padding is thick, there is a tendency to draw the plaster on in place of laying it on, and tension on the plaster bandage as it is being applied has a localized constricting effect which can have serious consequences. One of the most important points in correct plaster technique is to lay the bandage on smoothly without tension.

Rubbing the plaster as it is applied is sufficient to cause adjacent layers to fuse together, a feature essential to maximum strength. When the component layers of a cast or splint fail to adhere to each other, lamination and a weakened cast result. This usually results from too slow an application or too rapidly setting plaster. Plaster rolls and splints should be applied as quickly as is compatible with good technique, but the operator should not be rushed by too fast setting plaster.

Joints and fracture fragments should be placed in their proper position and alignment prior to beginning the cast. Altering joints and fractures during the first half of the setting process invites wrinkles and pressure points. Repositioning a part after the "halfway point" produces pressure sites and in addition weakens the cast. When sufficient fracture equipment and assistance are not available, large casts may be better applied in segments. For example, when encasing a fractured shaft of the tibia, it is frequently best to apply a thin plaster cylinder from the ankle to the knee, allow it to set solidly, then apply the foot and thigh portions of the cast. By making deep scratches in the cylinder, a satisfactory fusion between the segments of the cast can be expected to occur.

Heavy rubbing and molding of a cast after the "halfway point" is reached are detrimental rather than useful and should be limited to the period of application of the plaster. Lightly rubbing a plaster paste on the surface to "finish" the cast does no harm but it is best done when the cast is wet. If done after the surface is hard and dry, the surface plaster often cracks off.

After the application of a large cast such as a hip or shoulder spica, the patient should not be moved until the cast is well set. Many casts are bent and extensively damaged by moving the patient to a litter and into his bed before the cast is sufficiently rigid.

Bivalving, wedging, and making windows are best deferred until the cast is thoroughly dry. In those instances when a cast must be split or bivalved while it is yet "green," the cuts in the plaster should be made with a thin-bladed, sharp knife and the plaster disturbed as little as possible. Wedging of casts to correct alignment of long bones is an excellent procedure and should be employed whenever the position of plaster-encased fractures of the long bones is good and the alignment unsatisfactory. The cast is cut transversely for half or more of its circumference at the fracture site on the concave side of the "bowed fragments." After aligning the fracture, a cork or block of wood is placed into the wedge-shaped gap in the cast to retain the new alignment. If x-rays disclose good alignment, the gap is filled in well with a roll of plaster.

The proper sites for the reinforcement of the various plaster of paris casts were studied experimentally and clinically. It was found that when reinforcing those casts which encase joints moving predominately in one plane (knee, ankle, elbow, wrist), the reinforcing plaster splints should be placed anteriorly and posteriorly, rather than laterally and medially. Splints placed front and back made experimental casts about one-third stronger than when similar splints were incorporated into the sides of the cast. Tests also indicated that the reinforcing splints add more strength to the cast when narrow and thick than when wide and thin. This means that a plaster splint 6 inches wide and six layers thick contributes more to the cast if folded longitudinally to make a splint 3 inches wide and twelve layers thick.

If wooden, metal, or other types of non-plaster splints are incorporated into the cast, they should be perforated or notched to key them into the cast. When plaster slabs or splints are used alone and wrapped in place with non-plaster bandages, the mechanical principles dictating their proper application are opposite in some respects to the principles involved when splints are incorporated into casts. Splints or slabs used alone are much stronger when wide and thin than when narrow and thick. The splint or slab should extend from anterior or posterior well onto the sides of the part being splinted or be placed directly on the sides. When it is certain that a cast is to be bivalved or split, it should be reinforced more on the sides than on front and back. The junction of the pelvic and lower extremity portions of a hip spica should be given more reinforcement laterally than the front and back. This is due to the fact that the lower extremity portion of the cast does not join the pelvic part of the cast throughout its circumference. In a shoulder spica the arm portion of the cast joins the chest part of the cast throughout the shoulder's circumference; therefore, if the patient is to sit or stand,

the major reinforcement is best placed over the top of the shoulder and from the inner aspect of the arm across the axilla.

Summary

Plaster of paris is our most valuable medium for the immobilization of many wounds, but its physicochemical characteristics must be understood and respected in order to obtain the best results from its clinical applications. These characteristics have been reviewed in the light of their relation to good plaster technique.
Bull. U. S. Army Med. Dept.

MAXIMUM HEALTH FOR THE WORKER — MAXIMUM PRODUCTION FOR THE EMPLOYER

Industry is Expanding. The fifth annual McGraw-Hill survey of business plans for new plant and equipment indicates that industry not only expects to spend more than $20,000,000,000 during 1952, but also that expenditures during 1953, 1954, and 1955 may exceed $14,000,000,000 annually.

Tight Labor Market Expected. In a national economy based on conservation and expansion over a long period of time, the need for carefully protecting and wisely using our manpower is self-evident. Manpower is our major national resource, and without a labor force producing at top level, facilities and equipment are useless.

A Plant Health Service Is a Valuable Selling Point in a Tight Labor Market. Employees with a choice of jobs will often be swayed in favor of the plant with a reputable health service. Time saved means money in the worker's pocket as well as in the employer's bank account.

Women, Older Workers, and Rehabilitated Persons Are Sources of New Workers. Future sources of new workers are such groups as women without young children, older persons, adolescents, and the rehabilitated. Employment of these groups entails new responsibilities for which plant managers should have health specialists' advice.

Physical Examinations, Placement Service, and Training Are Essential to Fullest Utilization of Manpower. Specific measurements of the work capacities and abilities of new workers and consequent placement to correspond are necessary; training for the new worker and retraining for the older worker will have to precede their best production; and a favorable working environment is essential to maximum utilization of all manpower.

Employee Health Programs Increase Production. Sickness and disability lower production immeasurably. A large share of illness is of short duration and predominantly the result of non-industrial illness and injury. An employee health program can prevent some of this illness and shorten many of the absences.

THE N.A.C. AT WORK*

H. W. WEINERMAN, D.S.C.†
Brooklyn, N. Y.

MANY members have inquired concerning the American Chiropody Conference on Organization and Education, and in reply to their questions we present here the introduction which outlined the purposes of the sessions. The Conference was a typical "workshop program," and was devoted to subjects which are not usually included on scientific programs offered at the N.A.C. convention, regional or state meetings. In the past several issues of the JOURNAL we have published some of the papers presented, and others will appear during the year.

The Conference was an innovation in connection with the annual convention in Memphis. A complete program and schedule of the subjects included were published in various issues of the JOURNAL. These featured "problems of our profession and our efforts to solve them." Most other national organizations in the health field have had similar programs for some time, and the Executive Secretary on several occasions in the past has suggested that the N.A.C. establish and conduct a project of this nature at least once a year. Among the advantages offered by the Conference is that certain phases of problems which for various reasons cannot be published, is that they can be verbally brought to the attention of our membership in seminars of this type.

A. Purpose of the Conference—"the N.A.C. at Work"
   a. Current problems and issues confronting the profession
   b. The various presentations on this program
   c. Questions

B. Are we a Profession?

C. Criteria of a Profession
   a. Where we meet the criteria
   b. Where we do not meet them
   c. Where we are trying to meet them
   d. The answers were provided by the participants

D. Introduction of Speakers

This type of program offers an opportunity to discuss our problems. We shall attempt to explain some of our many activities, secure suggestions for improvement, and bring members up to date on how their policies are being carried out. It must be remembered that the House of Delegates, representing the state societies, formulates N.A.C. policies.

Among other things we will endeavor to show how the N.A.C. serves the public, the profession, our affiliated organizations, and individual practitioners. Most of what you hear will "describe the N.A.C. in action."

Generally, the N.A.C. conducts programs in three major fields and the presentations offered during the American Chiropody Conference on Organization and Education fall within one of the following categories:

*Presented at the American Chiropody Conference on Organization and Education, Memphis, Tenn., August 1952
†Chairman, Council on Education

1. Education—public and professional
2. Organization and Administration—national, state, and local
3. Membership Services and Programs

The problems selected for discussion are those in which many members have expressed specific interest. The Conference breaks the three fields of activity into approximately eighteen programs which are sponsored, planned, and conducted by the N.A.C. Most of them have been in operation for the past ten years. Twenty-seven speakers have been assigned to speak on various phases of these projects.

Special printed forms have been provided on which members may write questions. Please note that your name and address should be included on the form. The answers will be published either in special reports, individual communications, or in the JOURNAL of the N.A.C.

Criteria of a Profession

The development of a functional and forward-looking program for chiropody must take into consideration the history, current status, and probable future role of the profession. The impact of these forces on our objectives, curriculum, organization, financing, and accreditation is as great as those in medicine, dentistry, and other professions. Education is perhaps the best index of professional completeness. Our profession had the vision and courage to set its educational goals high enough to be in keeping with what it believes to be the needs of our practitioners.

Today we are faced with major decisions regarding the scope of our activities and the competence of our profession. Shall we remain in the health field observing very definite limitations as a professional group, or shall we expand our role to include a far wider sphere of service and influence through preparing and using personnel that can provide leadership in such areas as social, economic, welfare, administration, public policy, and in similar fields?

This Conference will provide many answers to that question.

1. Does the profession have a well defined function, the nature and scope of which can be identified?
2. Do we offer an indispensable service?
3. Does the profession have a philosophy, code of ethics, and other means of self-regulations which assure that its practice transcends the bounds of political, sectarian, and economic self-interest?
4. Do we recognize our obligations to society by insisting that our members live up to an established code of ethics?
5. Is our art and science based on acceptable scientific principles?
6. Does the profession have a unified pattern of organizations that can speak for it with one voice?
7. Does the compensation received by the professional practitioner indicate that the public is willing to pay him as a skilled and responsible professional person?
8. Is there, in fact, a recognized, specialized systematic body of knowledge, literature, skills, and attitudes which can be identified and transmitted as a regimen of professional preparation?

9. Is the practice of our profession limited, or tending to be limited, to persons with approved general and professional preparation, and do we provide adequate professional and cultural training, both for undergraduates and graduates?
10. Do we have a group-consciousness designed to extend scientific knowledge in technical language?
11. Do we have a sufficient impelling power to retain members throughout life?
12. Is the regimen of professional education recognized as of a quality appropriate for inclusion in the graduate and professional offerings of a university?

1688 East 16th St.

HEALTH — TWENTY-FOUR HOURS A DAY

Not many years ago a health service in a plant would have been labeled mollycoddling. Perhaps manpower was cheaper then, more plentiful — whatever reason for the attitude, today it is different, more humane. Healthy workers are not only industry's greatest asset, but they are equally important as a national resource.

In-plant programs were originally developed to provide prompt care to injured workers; later the services were extended to provide protection against occupational diseases.

This development was stimulated by the passage of workmen's compensation laws, which placed upon the employer the financial responsibility for accidents and illnesses arising out of employment.

Industry has always been eager to reduce absenteeism and labor turnover because they hamper production. When it became known that illness of a non-occupational nature accounted for more than 90 per cent of all absenteeism due to illness, industry became more concerned with the prevention of cases of a non-occupational origin.

This broader concept of maintaining and improving the health of the worker is in keeping with the recent realization that there is a distinction between optimum health and the absence of illness, and that the patient as a person should be treated rather than a specific symptom or condition.

Dr. Leonard A. Scheele, surgeon general of the U. S. Public Health Service, in discussing occupational health as a new frontier in public health, recently stated that the earlier concept of industrial health had broadened to include the total health of industrial employees. "Modern industry," he stated, "is the logical partner of the health department in bringing to workers and their families all of the new and rapidly growing knowledge for preventing illness and improving health."

Mr. A. J. Hayes, president of the International Association of Machinists, expressed the belief that the problems of industrial health can be dealt with more constructively if we recognize that they are pieces of the total health picture.

PRE-PROFESSIONAL EDUCATION*

C. E. KRAUSZ, D.S.C.†
Philadelphia, Pa.

My subject will deal with two phases of pre-professional education: (a) the history of the changes which have occurred in our educational requirements, and (b) the importance of proper pre-professional education.

Prior to 1912, chiropody training started at an educational zero. The first step in our present-day educational system was achieved with the establishment of the New York School of Chiropody on November 11, 1912. The first class graduated on June 3, 1913, just seven months later. Ten students at that time were awarded the Master of Chiropody degree.

Only one year of high school work was required for entrance to the school. This same requirement was in effect in the fall of 1914 when the California College of Chiropody was organized. In 1915, a department of chiropody was created at Temple University and applicants for the course were required to present a minimum of two years of high school.

Illinois College and Ohio College of Chiropody opened their doors in 1916; the former in January and the latter in the fall. By 1917, all schools, apparently, required two years of high school work as a minimum requirement. In 1923 this was increased to three years of high school work.

The announcements of the various schools printed in the September issue of the Journal of the N.A.C. indicate that all the schools except one required a high school diploma as an entrance requirement in 1924. This was the same year that the chiropody course was extended from one to two years. It is also interesting to note that at this time, that is, 1924, two of our schools were conducting a night course in addition to the day course.

The evening course was of three years' duration. The last evening class graduated in 1928. In 1931, the California College increased its professional course to three years. This policy was followed by the other schools in 1932. In 1936, Temple University increased its professional course to four years. In 1937, the First Institute of Podiatry, now known as the Long Island University, College of Podiatry, raised its pre-chiropody requirements to one year of college work.

In 1938, Ohio College and California College also adopted one year of college work as an entrance requirement. In the same year, Illinois College and Chicago College increased their professional courses to four years. In 1943, Temple University raised its pre-professional requirements to one year of college, and in 1944 Illinois College and Chicago College followed suit.

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*Presented at the American Chiropody Conference on Organization and Education, Memphis, Tenn.

†Dean, Temple University, School of Chiropody

In 1945, Long Island University raised its requirements to two years of college work, as did California College in 1951. It is the ultimate desire of all the schools to reach this goal in the near future.

As far as pre-professional training is concerned, this actually begins at high school level. Those who desire to enter chiropody or any other phase of the healing arts should enroll in the academic course. I recommend that the students should take a minimum of two years of Latin. This suggestion is based on the fact that 65 per cent of the medical terminology is derived from Latin.

The student should have one year of biology: the first semester devoted to botany and the second semester devoted to zoology. A full year of chemistry is necessary for that which will follow in college.

A pre-engineering student should display an aptitude for mathematics; so too, a pre-chiropody student should show marked ability in chemistry. In the senior year of high school, I believe that the student should take a semester of elementary electro-physics and a semester on the physics of light, heat and sound.

I mention the above because our patients often discuss the problem of their children's education during the course of their visit. As professional men and women, we should be in a position to answer questions on fundamental education.

Many failures and scholastic difficulties which develop in college can be traced to inadequate preparation in secondary education.

With the completion of the high school program the student is ready for his pre-chiropody training in an approved college of liberal arts. Thirty semester hours credit represents the minimum for a year's work. In making up this roster, the freshman college student has a choice of five subjects. Three of these should be English, chemistry and biology. Two more subjects should be chosen from the following: mathematics, foreign language, history or psychology. It may seem odd that we stress a course in English composition at the college level. However, we find that many of our students are fundamentally weak in this department.

Poor spelling and improper sentence construction seem to be common weaknesses among not only chiropodists but in all college students. On at least two different occasions, state board examiners have complimented chiropody students on their technical knowledge but condemned their abuse of the English language.

Closely related with poor spelling will be found a low reading comprehension level. In other words, the student only retains a fraction of the material which he reads. One of our chiropody schools has been testing incoming freshmen in this particular phase of educational endeavor for the past four years. All of this testing conclusively shows that those who are placed on scholastic probation are the ones with a poor reading comprehension score.

Inorganic chemistry for the pre-chiropody student is a must. Unless he is well grounded in this subject he cannot successfully cope with such courses as physiology, catalytic and low voltage therapy. The college biology course provides our pre-chiropody students with a background which is helpful in anatomy. Statistics have shown conclusively that failures in the anatomy course have been responsible for a higher mortality than any other subject in the curriculum of the chiropody colleges.

Those who are thoroughly grounded in biology seldom have these difficulties.

In addition to the biology, laboratory work provides practical training in the use of a microscope, a very necessary adjunct in the course of bacteriology, histology, and mycology, which follow in the professional course.

With the advent of the two-year professional requirement, our students will have the opportunity to secure additional training in scientific and other subjects that will provide the individual with the type of pre-professional training which will be equaling that of medicine and dentistry.

It is also interesting to note that pharmacy, which in my day was a course of two years, in which the student took his freshman year on Monday, Wednesday and Friday and his senior year on Tuesday, Thursday and Saturday, is now contemplating pre-professional training. Also in some of the states, optometrists are also requiring pre-professional training. At the same time this two years of professional training insures the future of our profession by providing men and women who will carry the standard of chiropody far beyond the original aims and intentions of those farsighted gentlemen who started the National Association of Chiropodists just forty years ago.

926 West Lehigh Avenue.

CONTACT ROENTGEN THERAPY OF COMMON WARTS

PRACTICAL and effective treatment of common warts is possible with contact x-rays. Each lesion is treated in a few seconds, a special advantage for children. Rays are chiefly absorbed in pathologic tissue, permitting greater safety to underlying structures than in ordinary technic.

The contact apparatus used by John G. Thomsen, M.D., of Peoria, Ill., and John E. Rauschkolb, M.D., of Cleveland, has an output of 9,000 to 9,600 r at a target-skin distance of 18 mm., or from 150 to 160 r per second.

A thin lead-foil shield with central opening can be employed at 18 mm., or sheet lead 2 mm. thick at a target-skin distance of 20 mm. Lesions are pared flat, subungual growths exposed by clipping the nail, and the involved part is either held against the tube or immobilized and the tube brought into position.

The treatment period averages fifteen to twenty seconds. Several warts may be irradiated at a sitting, but no area is exposed twice.

An intense but superficial inflammatory reaction develops ten to fourteen days after treatment. If the verruca has not fallen off in three weeks, the time of the second visit, the remnant is pared away. Crusting and scaling usually disappear a week or two later.

Contact therapy was applied to 540 warts on 117 patients, as a rule with single exposures of 2,100 to 2,500. The rate of cure was 83.6%. Doses between 2,500 and 3,000 r might be more satisfactory.

Arch. Dermat. & Syph. 65:553-556, 1952.

CHIROPODOLOGIA

In 1768, Mr. D. Low specialized in the care of the feet and practiced on Davies Street, W., London, England. He designated himself a "chiropodist" and in 1774 published a book entitled "Chiropodologia, a Scientific Enquiry, into the cause of Corns, Warts, etc." This volume is being reprinted in serial form because of its historical interest to members of the profession.

CHAPTER III

Of The Pain Occasioned

By Corns

MANY CAUSES contribute to the pain occasioned by corns; a pain which, as I have already shown, is particularly violent when there happens to be an adherence of the skin to the adjacent membranes, or to the capsulae of the joints.

In those which are callous at their extremities, a continual filtration is formed from within, where the source of the complaint lies; but from this filtration, which may be considered as an effort of Nature to unburden herself, dreadful shootings arise, and, not infrequently, very alarming inflammations.

In itself, a corn is absolutely void of sensibility; nor would it at all be productive of pain, but for its said connection with, and adherence to the skin, or to the capsulae of the joints. This is demonstrable from the quantities of horny matter which are daily pared from corns, without exciting in the patient the smallest sense of uneasiness.

The excrementitious humour that forms the substance of a corn may not unaptly be compared to a piece of catgut, which becomes more or less shrivelled when dry, and more or less tumefied when moist. In each of these states, as occasioned by the atmosphere, corns are productive of pain, often too of inflammation; and hence perhaps arose the saying, handed down to us by our grandfathers and grandmothers, that persons thus afflicted require not an almanack, predictive of the changes in the weather, their feet being sufficient monitors to them on that head.

Before I proceed to elucidate the methods of either palliating or eradicating the evils in question, it may not be improper to point out such as experience has confirmed to be effectual against certain other cutaneous inflammations and excrescences, which though widely different from corns, are yet often confounded with them. This duty I think the more incumbent upon me, as it may enable my readers to ascertain clearly when they are, and when they are not afflicted with corns, and thus put them upon their guard against the delusions of quacks, who, because they may occasionally have had it in their power to cure certain inferior complaints of the feet and toes, scruple not to boast that it is equally in their power to eradicate corns, and every other disorder of those parts, however obstinate.

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the **complete preparation**

prevention of tinea pedis

It is now generally recognized that many cases of tinea pedis are *not* fungal infections at all but are due *primarily* to bacteria. In many other cases, secondary bacterial infection is superimposed. NP-27 is more *dependably* effective because it is also *bactericidal.*

Moreover it is *sporicidal.* That is important because the disease easily recurs unless fungal *spores* are killed.

And NP-27 is fungi*cidal,* not merely fungi*static.*

Yet it is virtually nonirritating—even to delicate skin.

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AMOLIN® POWDER—Helps prevent bromidrosis, stickiness, discomfort. Cools and soothes tired, itching, burning feet. Will not cake in stockings or shoes. Fungistatic.

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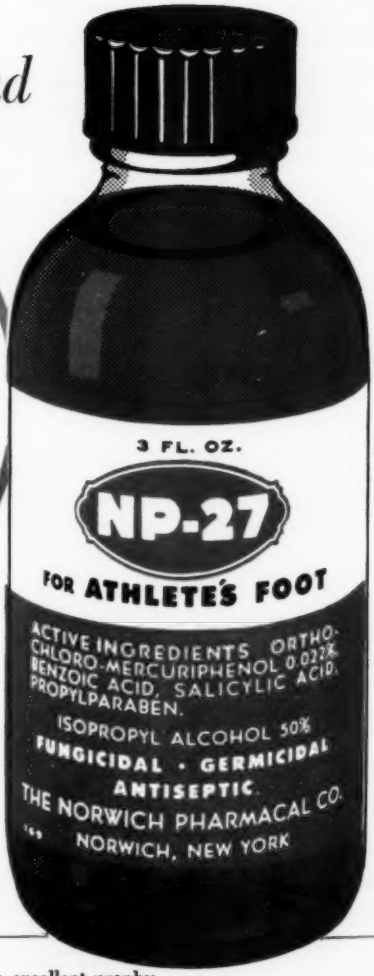

Each NP-27 carton carries this suggestion: "A chiropodist should be consulted."

UNGUENTINE®—An excellent prophylactic after minor surgery . . . an antiseptic surgical dressing...relieves pain . . . fights infection and thus promotes healing.

THE

JOURNAL

OF THE

NATIONAL ASSOCIATION of CHIROPODISTS

PUBLISHED UNDER THE DIRECTION OF THE COUNCIL
BY THE NATIONAL ASSOCIATION OF CHIROPODISTS

DR. WILLIAM J. STICKEL, *Editor*

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WASHINGTON 10, D. C.

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N.A.C. STUDY AND PLANNING COMMITTEE MEETS IN CHICAGO

THE STUDY and Planning Committee of the National Association of Chiropodists, comprising members of the Executive Committee and the Council, held an all-day session at the Drake Hotel in Chicago on January 24, 1953. President Max Speizman opened the meeting with an explanation of the purpose for which it was held. He said:

"At the 33rd Meeting of the House of Delegates held in Memphis, August 1952, the following resolution was adopted:

No. 24 Resolved, that the Executive Committee be authorized to make a continuing study of the activities of the N.A.C. and endeavor to measure their value to members under today's conditions. The feeling on the part of some members that certain activities and services are outmoded; the attitude that emphasis should be shifted from certain regular projects to immediate and pressing problems; and a determination to build maximum strength and effectiveness, suggests this resolution.

The Executive Committee acting as a special committee on "study and planning" supplemented by the Council members of the respective state societies could examine the various phases of our profession and professional organizations—their history and activities, and discuss, evaluate, consult and summarize their findings.

This offers a practical basis for making recommendations to the House of Delegates and furnishes a sound foundation for making long-range plans in the face of economic uncertainties and political confusion. (Submitted by Dr. Speizman).

No. 24 was later amended by Resolution No. 43 to provide that the Executive Committee and Council meet in January 1953. The essential purpose of this session is to provide a means of studying the activities of the N.A.C. and endeavor to measure their value to the membership, the profession and the public under present-day conditions. Following

our deliberations it is suggested that recommendations might be made by this group to the next House of Delegates which will convene in Los Angeles in August 1953.

In an effort to determine if certain programs, services, or other activities of the N.A.C. are outmoded, the Executive Secretary published a questionnaire which was distributed through the medium of the JOURNAL and which was designed to give individual members an opportunity to express their sentiments in evaluating the work of our National Association.

We are here to create a practical background for making recommendations to the House of Delegates in order to establish a sound basis for formulating long-range plans consistent with the financial ability of the N.A.C., its affiliated state societies and the membership-at-large, to fulfill."

Secretary Stickel gave a progress report on the following programs: (a) Armed Forces Commissions, (b) Hospital, Institutional and Industrial Affiliation, (c) Insurance Company Recognition, (d) Workmen's Compensation Laws, (e) Blue Shield and Voluntary Health Plans, (f) Medical Relations, (g) School Systems Contact, (h) Public Education. Dr. Harry W. Weinerman discussed "Educational Recognition." State society and regional affairs were brought to the attention of the assembly.

Dr. Stewart E. Reed, President-elect, introduced Mason Ladd, Dean, College of Law, University of Iowa, who discussed chiropodical legislative activities and offered pertinent comment on the "Ladd Report." His address was followed by a question period.

Members of the Executive Committee who attended were: "President Speizman, President-elect Reed and Executive Secretary Stickel.

N.A.C. committee chairmen and members who attended were: Drs. Weinerman, Dye, Myers, Guenzler, Thompson, and M. D. Marr.

The following members of the Council were present: Drs. A. Dyer, Ark.; C. Brantingham, Calif.; G. Patton, Colo.; J. Walker, Conn.; C. Conrad, D.C.; M. Marcus, Fla.; W. Garrison, Ill.; J. Deeley, Ind.; G. Thran, Iowa; R. Derrick, Md.; M. Garland, Mass.; J. Collicott, Mich.; A. Bell, Minn.; M. Upshaw, Miss.; L. A. Hansen, Mo.; D. Gartner, Neb.; G. Deyo, N. J.; B. Mullens, N. Y.; W. Oldham, No. Car.; S. Pusateri, Ohio; L. Houx, Okla.; C. Krausz, Pa.; H. Goldman, R. I.; P. Cogen, So. Car.; V. Marr, So. Dak.; E. Buske, Wisc.

The following alternates attended: Drs. D. Young, Ind.; E. Kaplan, Mich.; J. Morris, N. J.; C. P. Beach, Ohio.

A complete record of the proceedings of the Study and Planning Committee is being mailed to all Council Members. Recommendations made by the group will be presented to the next meeting of the House of Delegates.

AFFILIATED SOCIETIES AND MEMBERS ARE REMINDED TO BEGIN PREPARATIONS FOR FOOT HEALTH WEEK

Sponsored by the
NATIONAL ASSOCIATION OF CHIROPODISTS
May 16-23, 1953

FOOT HEALTH WEEK

Sponsored by the

NATIONAL ASSOCIATION OF CHIROPODISTS

MAY 16-23, 1953

THE N.A.C. FOOT HEALTH WEEK PROGRAM

THE PURPOSE of Foot Health Week, sponsored by the National Association of Chiropodists, is to direct the attention of the public and the chiropody profession to the need for making available foot health education and better foot care for children and adults. In addition, this nationwide activity is intended to promote foot care in the schools and in industry.

Affiliated state societies are requested to appoint a chairman and committee to conduct this important public education program. For maximum effectiveness, Foot Health Week programs are best organized on a community basis in cities and towns and on a county basis in rural areas. The various activities should be initiated by members of the affiliated state societies.

Numerous methods are suggested to encourage state and local societies and individual chiropodists to plan Foot Health Week programs. Some of the means employed to focus attention on Foot Health Week are:

1. Proclamations by Governors and Mayors
2. Public Lectures
3. Press Releases
4. Radio and TV Programs
5. Poster-Essay Contests
6. School Programs
7. Exhibits and Clinics

Helpful Suggestions

In order to obtain publication of a news release, time on television or radio, "personal contact" with editors and program managers is absolutely essential.

One excellent source for a news item is a proclamation by your state governor or the mayor of your city.

FOOT HEALTH WEEK PROCLAMATION

Members are urged to contact their governors and mayors and request these officials to issue a proclamation for Foot Health Week. Here is a suggested form:

WHEREAS surveys conducted by the National Association of Chiropodists show that seventy-two per cent of the people in the United States are afflicted with some type of foot ailment and

WHEREAS residents of the State of (insert name of state) realize that the health of both adults and children in this state is our most important asset, and we also are aware that sound foot health is essential to good general health and

WHEREAS we know that our responsibilities in this matter are of great importance to the Nation because the future strength and greatness of our people depends to a large extent on the state of their health,

WE THEREFORE DO RESOLVE that the period from May 16 to May 23, 1953, be proclaimed as FOOT HEALTH WEEK.

WE FURTHER RESOLVE that all residents, particularly parents, doctors, teachers, nurses, shoe merchants, and repairmen and all others who are interested in cooperating toward improving the foot health of our community be urged to participate in the public education program sponsored by the (insert name of state society) during FOOT HEALTH WEEK.

Seal Signed and Attested by
Date (Signature of Governor or Mayor)

FOOT HEALTH WEEK RELEASE

Rules for Foot Health

The care of the feet is essential to our health and comfort. Because so many people are apt to neglect these overworked parts of the human body, the National Association of Chiropodists sponsors annually a public health education program which is called "Foot Health Week." It will be held from May 16 to 23, 1953. This event has a single prime objective—to impress on the public the important need for preventing and treating foot disorders.

More than 72 per cent of the American people have foot ailments. Good posture is part of good health and is dependent on sound feet. Since a notable increase in foot ailments has been observed in recent years, we know that people must definitely give more and more regular attention to foot care.

Follow these simple rules:

1. Bathe feet daily. Keep them dry. Walk and stand with the toes pointed straight ahead.
2. Cut nails straight across – not round and too short.
3. Give immediate attention to all wounds, blisters, skin eruptions. Prevent athlete's foot. Use a good foot powder on the feet and in the shoes.
4. Exercise the feet and expose them frequently to the air and sunshine. Massage the feet often with a cream, lotion or baby oil.
5. Wear correct shoes that are properly fitted. Change shoes and hose often—this will relieve fatigue and excessive perspiration. Avoid runover heels, wrinkles in hose or shoe innerlinings and other creases which may cause friction or pressure on the feet.
6. Have children's feet examined several times a year by a chiropodist.

RADIO-TV ANNOUNCEMENT

Foot Ailments Can Be Prevented

Sound feet are the foundation of good health. The National Association of Chiropodists is sponsoring Foot Health Week from May 16 to 23, 1953. Surveys show that 72 per cent of all persons over two years of age in this country have some form of foot disorder. The purpose of Foot Health Week is to impress on the American people the need for more attention to the feet.

You are urged to follow a few simple rules of foot care. They will help prevent foot trouble.

1. Bathe feet daily. Keep them dry. Walk and stand with the toes pointed straight ahead.
2. Cut nails straight across – not round and not too short.
3. Give immediate attention to all wounds, blisters, and eruptions.

Foot Health Exhibits

Material for foot health exhibits is available through the Bureau of Visual Education of the N.A.C. Be sure to place orders early, so that delivery can be made before Foot Health Week. The following items are available: portable exhibit, complete $70.00; color, sound filmstrip $35.00; photograph, "foot examination of a child," 8 x 10 gloss print $1.50, 11 x 14 gloss print $3.00, mural (mounted) 2 x 3 feet $30.00.

Leaflets can be secured at $12.00 per thousand (10 per cent discount offered on orders over 5,000).

1953 N.A.C. AWARDS FOR RESEARCH IN CHIROPODY

Sponsored by the
Journal of the National Association of Chiropodists
and The NAC Agency, Inc.

Tenth Successive Year

First Award — $400.00

Second Award — $250.00	**Fourth Award — $50.00**
Third Award — $100.00	**Fifth Award — $50.00**

Members who desire to submit papers should make application on a form which can be obtained from the Executive Secretary. The rules for the 1953 awards were published in the July and September, 1952, issues of the Journal of the N.A.C.

Research papers on any subject in the field of chiropody may be offered. The final date on which papers will be accepted is April 15, 1953.

CHIROPODY AND PUBLIC HEALTH

Today, we in this country have fashioned for ourselves the highest standard of living yet known to man. We are no longer content to exist in the midst of an unhealthy, dangerous environment. The fight for new remedies and treatments for control of disease is constantly going on. Advances in chiropody which have contributed to the convenience and comfort of the individual are promptly adopted. Public thinking is on the threshold of a new concept of health.

Notable progress has been made in chiropodical science, especially in the knowledge of the functioning of the lower extremities in health and disease. Without this knowledge it would be impossible to develop the effective therapeutic methods which are currently in vogue.

Advances in the effort to control foot disabilities and make man a healthier individual are based on understanding the most complex of all mechanisms—the human body, research to discover new methods for preventing and treating foot ailments and the skill of the practicing chiropodist, for it is through his hands that chiropodical progress is brought to the patient. The advancement of chiropody can be measured through this combination.

However, the field of chiropody is not limited to the treatment of an individual patient by an individual practitioner. In some instances our professional sphere extends to the prevention and utilization of therapeutic procedures for the care of large numbers of people. The public has long recognized the place of the physician as an epidemiologist. In recent years it has come to understand the place of the dentist in this specialized area; the time has now arrived when people should also know of the chiropodist as an epidemiologist. Until comparatively recent years, the art and science of chiropody devoted its efforts solely to the treatment of foot disorders. Little attention was paid to their prevention. Now an attempt to remedy this oversight is being made and much thought is given to finding ways and means to prevent foot ailments and conduct educational programs in order to emphasize the important need for prophylaxis with the regard to maintaining foot health. In addition, the wide distribution of such diseases as fungus infections that require the services of chiropodists in practically every section of the country tend to point up the role of the chiropodist as a member of the "public health team" in every community. It is in this role that we must consider him an epidemiologist.

The word *epidemic* is variously defined as: attacking many people; a disease. The relationship between chiropody and epidemiology may be partially outlined as follows: control of fungus infections, verrucae, contagious skin diseases affecting feet; industrial and school foot health programs; periodic foot examinations and preventive chiropody; community and institutional foot health education; research.

N.A.C. DUES ARE PAYABLE NOW!

N.A.C. LOCAL ARRANGEMENTS COMMITTEE FOR LOS ANGELES CONVENTION APPOINTED

DR. M. NUDDLEMAN, President of the California Association of Chiropodists, and Convention Director Stickel, of the N.A.C., have announced the appointment of the following Local Arrangements Committee for the forty-first annual N.A.C. convention, which is to be held at the Hotel Statler in Los Angeles August 13-18, 1953: Chairman, Dr. Robert M. Barnes; Assistant Chairman, Dr. Julian Segal; Reception Chairman, Dr. Emma Anderson, and Drs. Neal, Lundell, Brantingham, Sholl; Exhibits Chairman, Dr. W. Cartledge, and Drs. Shor, Boll, Daiell, Arenson; Program Book Chairman, Dr. W. Cartledge, and Drs. Von Draska, Criswell, Balkin; Publicity Chairman, Dr. S. Katz, and Drs. Parker, Nozik, Waters; Entertainment Chairman, Dr. S. Hoffman, and Drs. Daiell, Bogaev; Scientific Chairman, Dr. Dale W. Austin, and Drs. Douglass, Aronow; Dr. George Scherer, Jr., Contact Assistant; Women's Auxiliary Chairman, Mrs. Mimi Aronow, and Mmes. Criswell, Shor, Rosenbloom, Matchett, Bliss, Lundell, Brantingham, Crooks; Public Relations Counselor, Mr. Dick Esheleman.

EXTRA COPIES INDUSTRIAL FOOT HEALTH ISSUE AVAILABLE

A limited number of copies of the Industrial Foot Health issue of the Journal (February, 1953) are still available. Many members have requested extra copies, and they will be furnished as long as the supply lasts. Send fifty cents to the Executive Secretary for each copy desired.

OLD DIATHERMY EQUIPMENT BANNED AFTER JUNE 30, 1953

The Federal Communications Commission has announced that it will be unlawful to operate nonconforming diathermy apparatus *after June 30, 1953*. The Commission on June 25, 1952, adopted an amendment extending permission to use apparatus manufactured prior to July 1, 1947. All diathermy apparatus must conform with the rules after June 30, 1953, and the Commission advises that it has no present intention of adopting any further general extension of the time for compliance.

THE PATIENT REMINDER

LEONARD G. CASSEN, Pod.D.
Lynchburg, Va.

AT A RECENT MEETING of our state association, one of the guest speakers was a well-known dentist. He discussed dental office procedures and practice management and one of the interesting sidelights of his talk was the statement that dentistry and chiropody had similar problems in the matter of patient control. The speaker pointed out that dentists generally employ the same methods of handling advance appointments and follow-up systems which are used by many chiropodists.

One question raised during the discussion concerned the value of sending out reminders to patients who had failed to visit the office after a lapse of many months. These notices usually mention that a definite number of months have passed since the patient's last appearance at the office. They usually remind the patient that periodic, regular treatments are necessary to maintain good health and comfort and they conclude by requesting the patient to call for an appointment. Our dental lecturer was positive that this type of reminder was of great value. However, some of his listeners expressed doubt concerning benefits which might be obtained from this procedure.

Attendance at scientific meetings frequently reminds us that we have been neglecting certain phases of our practice. The writer had not sent out any reminders to patients for several years and the discussion in question served to stimulate him to follow the dentist's suggestions. We went through our files and notices were sent to 385 patients who had not returned for treatment for periods ranging from six to thirty months. A careful check was maintained of all patients reporting for treatment during the ensuing five weeks. The following table depicts the results of the patient reminder mailing.

	Number of Months Since Patient's Last Visit					
	6	12	18	24	30	Total
1st Week After Mailing	5	4	1	1	1	12
2nd Week After Mailing	5	2	2	0	1	10
3rd Week After Mailing	2	1	1	0	0	4
4th Week After Mailing	2	1	1	1	1	7
5th Week After Mailing	1	1	1	0	0	3
Number treated one month after mailing						36

A total of 36 patients (9.6%) reported for treatment within a month after the mailing. The majority expressed appreciation of our interest in their welfare and several have been booked for definite future appointments.

838 Church Street.

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*President, Virginia Association of Chiropodists

"Always The Biggest And The Best"

REGION 3, N.A.C.

Delaware, Maryland, New Jersey and Pennsylvania

1953 CHIROPODY SCIENCE CONCLAVE

April 23, 24, 25 and 26

Hotel Ambassador, Atlantic City, N. J.

PAGEANT OF SCIENCE

A Treasure Chest of Knowledge Opened to Members of the N.A.C. Chiropodical Assistants, Senior Students, Women's Auxiliary.

Thursday, April 23 — LOW VOLTAGE SYMPOSIUM

a. **"Muscle Evaluation and Education"**
HAROLD E. FISKE, D.S.C., Gardner, Mass.
Abstract:—Conflicting reports regarding the role electrotherapy plays in muscle education and rehabilitation will be clarified. Serious errors may be made unless proper precautions are observed.

b. **"Simplified Uses of Galvanic Current-Ion Transfer Techniques"**
ARTHUR M. SCHULTZ, D.S.C., Pittsburgh, Pa.
Abstract:—A presentation of more common and advanced techniques that can be used with a minimum amount of technical knowledge including indications, essential details and results.

c. **"Practice Management with Low Voltage Currents"**
LEONARD HYMES, D.S.C., Pleasantville, N. J.
Abstract:—The lecture material will present an organized summary of practice routines that offer the most effective use of treatment time.

. . . . .

Those who have made advance registrations may present cases to the consultants for their opinions on diagnosis and treatment.

Recent Developments in Progressive Chiropodical Therapeutics

An afternoon with MARVIN STEINBERG, Pod.D., New York, N. Y.

a. **"An Original Surgical Technique and Instrument Employed for Onychocryptosis"**
Abstract:—A simplified procedure well within the reach of every practicing chiropodist making it possible to perform with ease an otherwise difficult operation. Differential diagnoses, surgical pathology and complete resume of this everyday problem will be covered. True color slides will illustrate the entire procedure.

b. **"An Advanced Approach to the Treatment of Calcaneal Spurs and Plantar Fasciitis"**
Abstract:—A review of heel pain and spurs will precede the introduction of a new easily applied office treatment procedure.

c. **"Consideration of an Original Biological Approach to the Treatment of Verrucae—Mosaic and Vulgaris"**
Abstract:—This treatment produces little or no discomfort. Case reports will be given and illustrated with color slides. The author will discuss his findings over 15 years of research, histological studies and clinical observations. Chiropodists should be the medical authorities for this common dermatological problem.

d. **"Spastic Flatfoot—A New Concept and Treatment Method"**
Abstract:—Some few facts are known about this foot problem. The speaker will report on 50 cases proving his theory of diagnosis and treatment heretofore unreported.

Time permitting, questions from the floor will be discussed.

REGION 3, N.A.C.
1953 CHIROPODY SCIENCE CONCLAVE
April 23, 24, 25 and 26
Hotel Ambassador, Atlantic City, N. J.
PAGEANT OF SCIENCE *(Continued)*

2.

Friday, April 24 — X-RAY INSTRUCTIONAL COURSES

a. **"When Should X-Rays Be Taken?"**
BERNARD D. SHERMAN, D.S.C., F.A.S.C.R., Stratford, Conn.
Abstract:—This course will consist, principally, of the specific reasons of "When?" and "Why?" of X-Rays in chiropody.

b. **"Forefoot Instability"**
RALPH E. SANSONE, D.S.C., F.A.S.C.R., Hartford, Conn.
Abstract:—A discussion of the rationale of orthokinetic failure as the etiologic factor in forefoot instability. The author's personal treatment procedures will be demonstrated.

c. **"Soft Tissue X-Ray"**
VINCENT JABLON, D.S.C., F.A.S.C.R.. Danbury, Conn.
Abstract:—Roentgenograms will be shown of comparable clinical cases to further illustrate and clarify this technique.

d. **"Demineralization and Eburnation"**
IRVING YALE, D.S.C., F.A.S.C.R., Ansonia, Conn.
Abstract:—Emphasis is placed on proper interpretation of these findings and the relationship to their cause.

e. **"After the X-Ray—What Then?"**
RAYMOND K. LOCKE, D.S.C., F.A.S.C.R., Englewood, N. J.
Abstract:—The correlation of Roentgen findings to treatment The speaker will discuss his approach to the treatment of hammer-toes, chronic digital excrescences and kindred conditions.

"Significant Signs and Symptoms of the Foot"
MAX M. POMERANTZ, M.D., Cleveland, Ohio
Abstract:—This course will outline the common conditions of the lower extremity and suggest the indicated laboratory procedures. The interpretation of laboratory reports will be explained.

THERAPEUTIC EVALUATION FORUM

a. **"Traction Technique for Mal-aligned Joints"**
JOSEPH NIMEROFF, Pod.D., Brooklyn, N. Y.

b. **"Dynamic Shielding of the Fifth Toe"**
ALBERT J. FIRTH, D.S.C., Chester, Pa.

c. **"A New Modality for Voluntary Muscle Stimulation"**
MILTON ASHUR, D.S.C., Jersey City, N. J.

d. **"Colloidal Oatmeal Therapy"**
A. A. SIMON, D.S.C., Caldwell, N. J.

e. **"Podophyllin For Wart Therapy"**
SAMUEL STOIFER, D.S.C., Philadelphia, Pa.

f. **"External Cod Liver Oil Therapy"**
MARIO CALLIGARO, D.S.C., Clifton, N. J.

g. **"A New Lanolin Emolient"**
OSCAR SCHEIMER, D.S.C., Westwood, N. J.

h. **"Cold Sterilization"**
WILLIAM W. THOMPSON, D.S.C., Philadelphia, Pa.

i. Three-minute discussions of any new device, gadget, modality, etc., will be discussed as time will allow.
Abstract:—The 1953 Therapeutic Evaluation Forum is intended to present the facts of "What's New" and "What's True About What's New."

REGION 3, N.A.C.
1953 CHIROPODY SCIENCE CONCLAVE
April 23, 24, 25 and 26
Hotel Ambassador, Atlantic City, N. J.

PAGEANT OF SCIENCE *(Continued)*

3.

Saturday, April 25 — PRACTICE MANAGEMENT FORUM
The Business Side of a Profession

Moderator: BERNARD C. EGERTER, D.S.C., Pittsburgh, Pa.

a. **"Are You Practicing Chiropody?"**
CHARLES TURCHIN, D.S.C., Washington, D. C.

b. **"How to Utilize An Assistant"**
H. L. COLLINS, D.S.C., Columbus, Ohio

c. **"Ten Reasons Why You Lose Patients"**
BERNARD C. EGERTER, D.S.C., Pittsburgh, Pa.
Abstract:—This course will bring into focus and develop the application of ethical economics and sound business methods necessary in your professional life.

N.A.C. ACCOMPLISHMENTS — N.A.C. OBJECTIVES
WILLIAM J. STICKEL, D.S.C., Washington, D. C.
MAX SPEIZMAN, D.S.C., Wilkes-Barre, Pa.
Abstract:—There is no reason for any chiropodist not to know just what his National organization is doing toward the planned progress of our profession.

CHIROPODICAL TECHNIQUES

a. **"Developments in Nail-wiring"**
EDWIN L. RUBIN, D.S.C., and SEYMOUR BACHMAN, D.S.C., Scranton, Pa.

b. **"Pressure Bandages"**
GEORGE F. HOLT, D.S.C., Asheville, N. C.

c. **"Functional Inner Soles"**
ARNOLD NEWMAN, D.S.C., Philadelphia, Pa.

d. **"Ten Practical Pads"**
THEODORE ENGEL, D.S.C., Philadelphia, Pa.
Abstract:—This review of treatment methods will help you determine the causes of recurrence and suggest methods of improvement of your individual technique.

Sunday, April 26 — TRUE THREE DIMENSIONAL COLOR FILM

"Introducing A New Modality"
KENNETH TYDINGS, D.S.C., Long Beach, N. Y.
Abstract:—For the first time before any scientific meeting, the presentation of a moulded sandal will be shown in the latest form of visual education. Methods of correction and foot balance will be depicted. We suggest that those chiropodists interested in public information and visual education attend this feature and obtain detailed information from an authority on this newest motion picture development. Special polaroid glasses will be supplied to all advance registrants.

"Industrial Chiropody"
GEORGE F. HOLT, D.S.C., Ashevile. N. C.
Abstract:—At a recent meeting of the Southern Medical Association, Dr. Holt delivered a well-received paper relative to our professional contribution toward industrial health and welfare. Dr. Holt will explain fully how you can gain entree to this branch of practice and will provide a format that can be used in your locale.

REGION 3, N.A.C.

1953 CHIROPODY SCIENCE CONCLAVE

April 23, 24, 25 and 26

Hotel Ambassador, Atlantic City, N. J.

PAGEANT OF SCIENCE *(Concluded)*

4.

"TREATMENT METHODS IN COMMON CHIROPODICAL SKIN DISEASES"

SAMUEL M. PECK, M.D., New York, N. Y.

Abstract:—This review will include a kodachrome slide presentation of the successful treatment of mycotic nails, tineal therapy, verrucae therapy, chlorophyll therapy, Vitamin "A" in the keratoses and the role of vitamins in other dermatologic lesions. Dr. Peck will also discuss the relationship between fungus infections and the reactions to anti-biotics, especially penicillin.

CHIROPODICAL ASSISTANTS AND WOMEN'S PROGRAM

Friday, April 24

a. "How to Live with a Chiropodist"
"Suggestions for Women's Auxiliary Projects"
MARVIN W. SHAPIRO, Toledo, Ohio

b. "Low Voltage Therapy Hints for Assistants"
HARRY M. TARNOFF, D.S.C., Chester, Pa.

c. "Skin Care Before and After Taping"
HAROLD W. ORR, D.S.C., Wilmington, Dela.

d. "Efficient Business Methods—Efficient Assistant"
GEORGE J. DEYO, D.S.C., Elizabeth, N. J.

Saturday, April 25

a. "Charm Unlimited"
MRS. BETTY JANE HARRIMAN

b. "Assistants Forum"
HELEN ZUBROW, D.S.C., Philadelphia, Pa., and
JEAN MCCULLOUGH, D.S.C., Sandy Lake, Pa.

All This and Heaven Too—Fun Feast of Social Activities with unparalleled facilities for entertainment and relaxation in the Playground of the World, the profession's largest display of Technical Exhibits, Special Ladies Program, Visual Education Exhibits, Personal Publicity Releases, Certificates for attendance at ALL scientific sessions.

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Mail $6.50 for Dr. Max Speizman Testimonial Banquet Reservation to
Dr. Joseph M. Funston, 205-B No. Wilson Ave., Margate, N. J.

"ALWAYS THE BIGGEST AND THE BEST"

CURRENT LITERATURE

LOCAL STIMULATION OF GROWTH OF LONG BONES

Differences in limb length in children have been treated by arrest of growth of the longer bone or stimulation of growth in the shorter. Pease describes his technique for local stimulation of bone growth by insertion of ivory screws near the epiphyseal cartilage. Daily for one month prior to the operation, a teaspoonful to a tablespoonful of phosphorized cod liver oil is given to the child, the dosage depending upon the age. Ivory screws or pieces of ivory are sterilized by being placed in 95% alcohol and autoclaved under 15 lb. (6.8 kg.) of pressure for one hour. After a lateral longitudinal incision has been made at the end of the bone, just enough of the periosteum is stripped to permit drilling the holes. Although the incision is made in the epiphyseal plate region, it is not only unnecessary to expose the cartilage but it is recommended that the plate be avoided. Not one complication has arisen from this approach, but too much trauma at the site of the epiphyseal plate may arrest growth. The drill should be at least 1/64 in. (0.25 cm.) smaller than the screw. After the depth of the drill hole has been determined, a mark is made on the proximal portion of the screw to indicate how far the screw must be driven into the bone in order that its distal end will extend just through the opposite cortex. The remaining proximal portion of the screw is then cut off flush with the cortex. Seven patients on whom this operation was performed have been followed for 6 months to 12 years. In five the growth retardation of the bone was due to poliomyelitis, in one to congenital hypoplasia, and in one to a congenital dislocation of the hip with associated hypoplasia of the femur. A secondary operation was performed in two cases, five and three years after the initial procedure. Stimulation of growth followed operation in all cases. No severe deformities occurred, but if they had, an osteotomy would afford additional length and at the same time produce further stimulation of longitudinal growth. Acceleration of bone growth occurred in four patients with poliomyelitis three, four, five, and six years after onset of the disease, coincident with growth-stimulating procedures. This suggests that the cells in the cartilage columns of the epiphyseal plates have not undergone degenerative changes during these periods. Much remains to be learned about bone growth in children. From the conflicting reports on the results of growth stimulation in animals, it is obvious that animal experimentation is not a reliable tool for study of growth stimulation of long bones.

J. Bone and Joint Surg. 34A:1-248 (Jan.) 1952

MEMBERS ARE URGED TO PARTICIPATE IN LOCAL INDUSTRIAL FOOT HEALTH PROGRAMS

MEDICAL ASPECTS OF ULTRASONICS

THE so-called ultrasonic sickness of personnel working around jet power plants is probably due more to hysteria and excessively dramatic publicity than to ultrasound.

The physicists who made the earliest measurements on ultrasound fields stated that if the sound waves were audible, the levels were high enough to be damaging to the ear. Later quotations of these conclusions apparently neglected the qualifying phrases, and stories of the mysterious effects of ultrasonics grew.

In relation to the industrial use of ultrasonics, Maj. Horace O. Parrack, U.S.A.F., states that reasonable care in process layout and utilization of protective equipment should remove any possible hazards. Likewise, the probability of hazards should be considered in the medical use of ultrasonics, experimental, diagnostic, or therapeutic.

Industrial Applications

Ultrasound equipment is used to detect flaws in and to determine properties of materials, to prepare emulsions, and for agglomeration of particles from liquids and gases. These operations are so arranged and the equipment so designed that little chance exists for direct contact of the operator with the generator or the material being tested. Chance of a hazard to personnel is negligible.

Operations such as removing grease from metals and other cleaning processes employing ultrasonic energy may require direct contact of the attendant with the irradiated material so that a probable danger exists. In such operations, equipment should be used to prevent contact between any part of the operator's body and the generator or material being irradiated.

Medical Applications

Experimental—The production of heat always accompanies ultrasonic irradiation of bone, nerve, and other tissue. Since heat may cause damage, all effects of ultrasonic energy have been attributed to the results of overheating. However, effects are still produced by ultrasonic irradiation when the factor of overheating is controlled.

Diagnostic uses—Foreign bodies or crystal secretions in the body may possibly be located by use of ultrasonic waves. Reasonably satisfactory ventriculograms have been obtained with ultrasonics without using operative procedures or the injection of gas. Another application of ultrasonics in diagnosis is as a possible method for localizing gallstones.

Therapeutic uses—Most American investigators have found that the therapeutic effect of ultrasonic energy is uncertain and that the hazards from excessive exposure and destruction of tissue are considerable.

The use of therapeutic apparatus when the operator is in contact with the generator for several hours a day is probably harmful unless protective equipment is used. Burning of the operator's skin and other undesirable actions have been described in German reports. At present the degree and extent of the dangers cannot be stated.

If use of ultrasonic equipment becomes extensive in therapy, the nature and extent of the risks must be carefully ascertained. However, such hazards should be easily controlled.

Industrial Med. & Surg. 21:156-164, 1952.

It's Here!

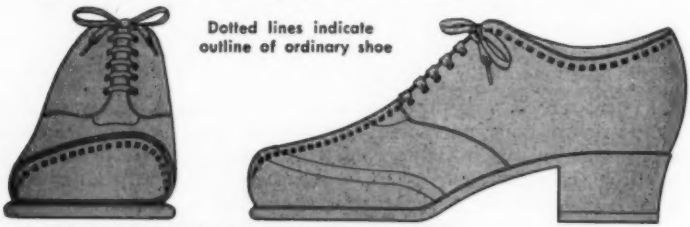
A SHOE FOR SCIENTIFICALLY FITTING INLAYS, BALANCERS AND OTHER FOOT APPLIANCES . . .

EXTRA DEPTH IN FOREPART

Special last design provides extra room at the throat and over the toes across the entire treading area, allowing room for inlays, balancers and other foot appliances, without crowding the foot. There is no need, now, of misfitting with oversize shoes to accommodate foot appliances.

EXTRA DEPTH AT THE HEEL SEAT

EDWARD'S INLAY-DEPTH lasts provide an extra ⅛" depth at the heel seat, thus preventing slipping at the heel and also accommodating corrections and appliances extending under the heel.



EDWARD'S INLAY-DEPTH SHOES

enable you to insert inlays, balancers and other foot appliances without using an oversize shoe and without foot distortion, strain, cramping or pinching. EDWARD'S INLAY-DEPTH SHOES provide the extra room needed to accommodate the appliance and still give snug comfortable fit across the instep, around the ankle and at the heel.

Write for catalog (on your professional stationery please) and acquaint yourself with our Doctor Method of prescription shoe fitting.

THE SATISFACTORY SHOE CO.

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MEMBER A. C. E.

STRESS

WHAT is stress? What are "stressor agents"? Selye catalogues them as follows: trauma, bleeding, burns, heat, cold, x-rays and other ionizing radiations, sunlight, electricity, nervous stimuli, exercise, rest (!), anoxia and asphyxia, infections, anaphylactic reactions, drugs and other poisons, hormones, and diet. The common denominator of all these is that they are potentially harmful, even lethal, to their victim; and if he is to survive a severe exposure to any of them, he must react defensively against them. The mechanism of this reaction has been described and defined by Selye under the names of the alarm reaction and the general adaptation syndrome. These consist in barest essence of increased pituitary secretion of corticotropin (the adrenocorticotropic hormone, or ACTH), which causes the adrenal cortices to secrete increased amounts of the several adrenal cortical steroid hormones; these in turn act on the peripheral tissues to help them defend the whole organism against the enemy. It is when this defensive response is inadequate, excessive, or abnormal, that the "stress diseases"—the rheumatoid group, the "collagen" group, the allergic-psychogenic disturbances, hypertension, peptic ulcers, and so forth—are produced. The concept is still incompletely developed, obscure in many areas, and beset with contradictions; yet it has already proved to be an extremely useful one in both theory and practice, as we all know.

Harry L. Arnold, Jr., Hawaii M.J.

ARMY USES NEW METHOD TO ATTACH HEELS

A COMPARATIVELY simple change in the design of whole rubber heels used on combat boots and service shoes procured by the Army Quartermaster Corps is expected to minimize the loss of heels in the field and to reduce costs entailed in replacing lost heels, according to the Department of the Army.

The 7/8-inch thick rubber heel is attached to combat boots and service shoes by means of 13 nails. The holes admitting the nails through the heel are recessed. At the bottom of each recess is a metal washer against which the head of the nail is driven.

Heretofore, the washers within the recesses were set at a uniform distance, thus regulating the length of the nail tip which is clinched over to hold the heel on the sole. Following extensive laboratory and field tests conducted with the aid of the shoe industry, it was found that if the washers holding the five nails at the rear of the heel are countersunk an additional 1/16-inch, thus permitting more of the nail length to clinch the sole, the heel is more firmly anchored and loss of heel through rough wear is substantially reduced.

Deepening the five rear washers permits the use of standard shoe nails without any change in the processes of manufacturing Army combat boots and service shoes.

Changes in specifications covering 7/8-inch thick rubber heels to be attached to combat boots and service shoes, altering the location of the metal washers, became effective December 1, 1952. For purposes of identifying the new type heels, industry will label them with the letter "W".

SAPERSTON'S
COLORED CALF TOPS

for that "Extra Eye Appeal"

Constructed in the wide range of approved flanges as illustrated on page 10—for ready-made stock sizes, SEE numbers 2801 to 2812 on Page 22 in your Saperston's catalog. If you don't have one we will gladly send it . . . and a supply of foot-print Charts FREE upon request.

*In adding superior Comfort-performance, to the handsome "semi-flexibles" is another reason for instant acceptance and continuous patient appreciation.

*Either hand-made to special prescriptions or to regular stock sizes in luxurious calfskin tops, combined with contrasting suede bottom covers — these Saperston's Semi-Flexibles are top favorites with more and more Doctors. Second only to our famous all flexibles.

*Streamlining and modern designed patterns which conform to the present-day conservative footwear assures trouble-free fittings, greater stability and balance, plus quick relief combined with lasting comfort.

*Semi-flexibles in mahogany or *blond calf tops* represent the very top level in quality and orthopedic performance.

Prescription orders are completed and shipped within 2 or 3 days; ready-made stock sizes within 24 hours after receipt of your orders.

ESTABLISHED 1918

To be sure of your fittings—prescribe SAPERSTON'S

SAPERSTON LABORATORIES

Custom Designers of Modern Foot Appliances

35 S. DEARBORN STREET CHICAGO 3, ILLINOIS

Development of the new method of attaching rubber heels is cited by the Office of The Quartermaster General as another example of the continuing cooperation of industry in the program to improve the clothing and footgear of the U. S. soldier.
Leather And Shoes, Nov. 15, 1952.

URGE NON-MEMBERS TO JOIN THE N.A.C.

THE WRITING BETWEEN THE LINES

TAKE a look at your handwriting. The length of your stroke, where you dot your i—these things are not a matter of chance. According to graphanalysts (often called graphologists), the characteristics of your handwriting are products of the law of your personality. As such, they tell a lot about you. No two handwritings are ever alike. They are as individual as fingerprints. In the hands of an expert, handwriting gives a pretty clear picture of the personality which produced it. That's why handwriting analysts like Cleveland's Hazel Hutchison are being called on frequently these days to help industrial personnel and placement men find out more about the people they must fit to jobs. Graphanalysis can reveal important personality traits. Is the individual honest? Is he emotionally stable? Is he intelligent enough to follow instructions on a given job? Can he endure monotony, present on some tasks? How will he react in an emergency? Is he liable to have trouble getting along with other employees? Does he have leadership qualities? These are some of the things you can find out by handwriting analysis. And while it doesn't suggest that you forget about thorough pre-placement physical examinations, graphanalysis can tell you important facts about an individual's health—particularly those concerned with blood pressure and metabolism. Even more surprising is the graphanalyst's ability to identify tendencies before they become physically apparent. Addiction to drugs and alcohol is evident in handwriting. So are suicidal tendencies. So are incipient brain diseases and paralysis.
—From "Graphanalysis: A New Placement Tool?" in Occupational Hazards, Aug. 1952.

MEMBERSHIP APPLICATIONS

State Society Secretaries and Membership Chairmen are urged to send applications for membership promptly to the N. A. C. Please make every effort to speed up processing the applications.

STRONG, STURDY CONSTRUCTION
that will hold its shape for the life of the shoe — yet it's soft and flexible with cushioned insulation against cold and heat.

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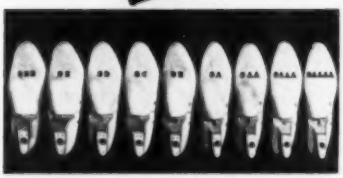
Better Fit



MUSEBECK lasts are graded for better fitting results. Regardless of the width, the size length always remains the same. For example, a size 9 is always a size 9 in length whether it's a AAA or a EEE width.

This is not true on standard lasts. This is the reason for so many mis-fit shoes. Musebeck special last grading gives you the correct fit.

Longer Wear

BUZZ SAW TEST shows quality construction and patented features exclusive with Musebeck Shoes

1. Double celastic box toes do not break down.
2. Flexible leather innersole stays smooth.
3. Cushioned insulation against cold and heat.
4. Extra strong support for metatarsal arch.
5. Special Musebeck construction patented.
6. Patented steel arch construction.
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9. For better fit: curved heel seat.
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FOR MEN AND WOMEN

Here's a new development in shoes that's rapidly proving itself among chiropodists all over America, and in a short period of time, we predict it will be their number one choice.

Chiropodists find this shoe the ideal foundation for their inserts and appliances, and their patients like the style, the comfort and the long wearing qualities.

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ABSTRACTS AND HEALTH NEWS

WANTED—MILLIONS OF MIRACLE MAKERS!

OVER 60 million Americans can be miracle makers. You are probably one of them. Any person from 21 to 59 who is in good health and weighs 110 pounds or more is eligible.

The miracle you can perform is saving human life. Yes, you can really help save precious lives. And it is important that you do it right now!

Although the miracle of saving human life challenges the imagination, you can do it with a little of your blood. In less than an hour you can simply and painlessly donate a pint of your blood to help someone live.

The National Blood Program is calling on you to help in this miracle making business so that no one here at home or our men fighting in Korea need die for want of this vital substance.

You are needed at your local Blood Donor Center now. Call your local Red Cross Chapter to schedule your donation today.

THE CONVENTION'S CONTRIBUTION TO PROGRESS

CONVENTIONS portray their innate possibilities for progress. They evidence the slow, constant growth, development and fruition of the individual and, consequently, the profession. These meetings are giant crucibles in which the elements of our profession from all points of the compass are subject to the fire of close scrutiny. Ideas take shape, individuals grow, together they are the crystallized essence of progress. Nor is progress necessarily confined to developing new ideas and technics. They are but the products of an individual's efforts. Just as every crystalline substance has a characteristic structure, so does the individual.

St. Louis Dent. Soc. Bull., Sept. 1952.

PARTICIPATION IN PUBLIC HEALTH

PUBLIC HEALTH programs should be so organized that the people who have the problems are given an opportunity to plan and contribute to the solution. Too often there is little participation by the individual, who passively receives the services. In a sense, health officials should aim to make every citizen a public health worker, at least in his own behalf.

Pub. Health Rep., Apr. 1952.

CLEAR THINKING

YES, clear thinking is rare. To approach it, we need above all that indispensable quality of the scientific spirit—humility. Like the good scientists, we must be ready to sacrifice some of our personality and habits of thought as we face each new problem. For life's problems are always new, and defy all ready-made solutions.

Doctor — Are You Educating Your Patients?

Regular foot examinations are important to health. Suggest them during office visits. You can make a real contribution to our public education program by cooperating in this manner.

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One — the importance of all chiropodists is enhanced greatly by all our advertisements. Two — more and more patients will come to consult you. Three — you'll enjoy better relations with everyone in your community. Chapman's Children Shoes is happy to tell people in its advertising: "To insure proper foot health for your child, visit your chiropodist regularly." We know you'll want to cooperate in seeing that children choose the shoes that are best for them.

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have *"GRO-LAST"* especially designed for growing feet

HILL SHOE COMPANY—70 N. 4th St., Phila. 6, Pa.

That's what makes life so interesting.

Rudolf Flesch, The Art of Clear Thinking.

THE IDEAL DOCTOR

WHY do doctors so often make mistakes? Because they are not sufficiently individual in their diagnoses and treatment. They class a sick man under some given department of their nosology, whereas every invalid is really a special case, a unique example. How is it possible that so coarse a method of sifting should produce judicious therapeutics? Every illness is a factor simple or complex, which is multiplied by a second factor, invariably complex—the individual, that is to say, who is suffering from it, so that the result is a special problem, demanding a special solution, the more so the greater the remoteness of the patient from childhood or from country life. The principal grievance which I have against the doctors is that they neglect the real problem, which is to seize the unity of the individual who claims their care. Their methods of investigations are much too elementary; a doctor who does not read you to the bottom is ignorant of essentials. To me the ideal doctor would be the man endowed with profound knowledge of life and of the soul, intuitively divining any suffering or disorder of whatever kind, and restoring peace by his mere presence. Such a doctor is possible, but the greater number of them lack the higher and inner life, they know nothing of the transcendent laboratories of nature; they seem to me superficial, profane, strangers to divine things, destitute of intuition and sympathy. The model doctor should be at once a genius, a saint, a man of God."

Sci. Monthly, Sept. 1952.

WHY PATIENTS DON'T COME BACK

IN a survey of more than one hundred patients, their reasons for failing to return to a dentist or physician after one or two appointments were classified as follows:

1. Inability to inspire confidence, caused by nervousness and indecision on the part of the practitioner.
2. Failure to discuss the patient's condition fully.
3. Time-consuming first appointments, during which no diagnosis or treatment is accomplished.
4. Embarrassment of the patient on the first visit by moralizing, asking intimate questions, responding emotionally to the patient's condition, or pointing out his defects.
5. Neglecting to treat patient as an individual and with respect.
6. Strict orders for further treatment, which the patient is unable to live up to.
7. Failure to indicate cost of future treatments, causing patient to fear excessive fees.

In order to avoid the attitudes and errors which cause patients to stay away, remember that irritating habits and mannerisms can do much harm. Check yourself for these shortcomings at regular intervals.

Medical Economics.

YOUR N. A. C.

DUES ARE

PAYABLE

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Chiropody Bibliographical Research Society—Dr. S. E. Reed, 425 Kresge Bldg., Des Moines, Iowa
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The Journal of the National Association of Chiropodists

Deadline for Journal copy is the 10th of the month before publication (example: copy for June issue should be in our hands by May 10th). The Journal is usually mailed between the 20th and 25th of the month noted on the issue (the June issue is mailed between the 20th and 25th of June).

Orders for reprints must accompany manuscripts. Authors should state quantity desired at the time paper is forwarded to the Journal.

Manuscripts must be typewritten, double spaced, and an original copy must be submitted. Reference should give name and initials of author, volume, page, month and year of publication in the case of periodicals, and publisher and place and year of publication in the case of books. Illustrations must be clear photographs. Glossy prints are preferred. Drawings must be made in black ink on heavy paper or cardboard. Any illustrations should bear the author's name and be numbered in the order in which they are referred to in the text. Illustrations must not be pasted on the manuscript. Legends should be placed on a separate sheet. Tables are not illustrations and should be numbered separately.

ANKLE SWELLING

Question: Severe edema of both ankles developed in a 47-year-old woman three years ago on a trip to Florida. Since then her ankles swell whenever she is exposed to heat, whether Michigan summer or Florida winter. Her general health is excellent and complete examinations show no abnormality of heart or kidneys. She has no history of allergy. Have you any suggestions?

Answer: The commonest cause of edema of both ankles is local circulatory fault and not disease of heart or kidneys. A survey done some years at the Massachusetts General Hospital showed that only 10% of ambulatory patients coming to the outpatient clinic with edema of both ankles had heart disease as the responsible cause. The great majority had either overweight, varicose veins, or phlebothrombosis. A few had kidney disease or other causes for the edema. Normal persons who stand or sit for considerable periods of time are prone to slight swelling of the ankles, especially if they are overweight and especially in hot weather. Also, in the case of women, there is a tendency to more swelling at the time of catamenia. Severe edema, however, is not likely to be the result of such factors as obesity and heat alone. It seems probable that some deficiency of the circulation, especially the venous circulation, has been responsible, and it would seem desirable to investigate this matter further in the case cited.

WALKING AFTER POLIOMYELITIS

RESTORING ambulation to the poliomyelitis convalescent requires the patient's full cooperation and a well-qualified professional staff. This program is long, consisting of progressive activities.

The early preparation for gait training must be as carefully planned as details of the final functional activity, explains Duane A. Schram, M.D., Aline Bletcher and Carmella Gonnella, M.S. Preparation consists of progressive resistance exercises, mobilization, and fitting of walking equipment.

Progressive resistance exercises are used to strengthen the muscle groups of primary importance in walking. These units are the body elevators, hip hikers and lower extremity weight-bearing groups. If a pool is available, underwater resistance exercises are excellent to supplement methods that employ weights and balances.

Full utilization of the strength of subnormal muscle units is mandatory for success. Units working at a disadvantage because of faulty alignment may be mobilized by various methods. The severity of the technic used in mobilization is in direct proportion to the degree of tightness. Slight contracture may respond to manual manipulation, while an old severe contracture can generally be reversed by traction.

Apparatus including crutches, corsets, braces and canes is indicated where needed for support, assistance and protection. In anticipation of early walking reeducation, the physician makes adequate prescription for apparatus and later examines the fitting. Ill-fitting equipment handicaps the patients and may predispose to deformity.

After a patient has had progressive resistance exercises for some time, the rate of progress in return of strength diminishes. Gait training should then be considered.

The basic requirement of gait is balance. Acquiring a gait is a matter of developing sufficient coordinated strength to alter position.

Locomotion is accomplished by first losing, then regaining balance.

The therapist must start with the simplest maneuver, progressing to a more difficult one only after the less complicated activity is mastered. Some patients may need to commence balancing exercises in the sitting position; other less severely affected persons can usually begin in the upright position between bars. The height and width between handrails should be the same as that between hand grips if the patient were on crutches. Practicing before a mirror lets the patient see what he is doing.

The fundamental gait pattern is learned in the parallel bars. The type or types of gait taught are those best adapted to the individual. The fundamental gait patterns are: *four point gait*—slowest but safe; *two point gait*—faster but requiring greatest strength and coordination; *three point gait* – for patients with only one nonfunctional leg; *tripod gait* – in which both crutches are moved forward and placed on the floor simultaneously, with the body swinging to land behind or in front of the crutches; and *exceptional gaits*—those which conform to none of the above and require improvisations.

Phys. Therapy Rev. 32:362-366, 1952

SEIZURE OF THOUGHT

I HAVE observed with wonder so many intellectual and literary fashions that I have come at last to rely positively upon one conviction alone. No idea is so antiquated that it was not once modern. No idea is so modern that it will not some day be antiquated. . . . To seize the flying thought before it escapes us is our only touch with reality.

Ellen Glasgow, Address to the Modern Language Association.

MISCELLANEOUS

THE MATURE INDIVIDUAL

FORTUNATE is the individual who can so govern the expression of his instinctive drives as to experience the least conflict in adaptation. Attainment of such adequate self-direction leads to the inner security, the preservation of mental health, and the integrity of personality necessary for wise decisions and ethical conduct. Honesty, courage, facing reality, getting along with others, and doing his job well are indications that a person thinks and acts as a responsible member of society. Moreover, in acquiring these desirable qualities of personality, he has developed the major distinction that marks him as a mature adult; he has progressed from egocentricity to social consciousness—self is subordinated in service to others. The immature individual's attitude toward society is indicated by his goal, as expressed in terms of "What can I get out of it?" The mature individual thinks and acts in terms of "What can I give? What opportunity for service is available?" Habits of thoughtfulness, consideration, kindness, and tolerance have crystallized in the personality and have made self-evident the fact that usefulness brings the greatest satisfaction in life; that happiness is based not upon material things alone, but upon the security of a self-disciplined life motivated by interest in the welfare of one's fellow man.

Mental Hygiene, July, 1952.

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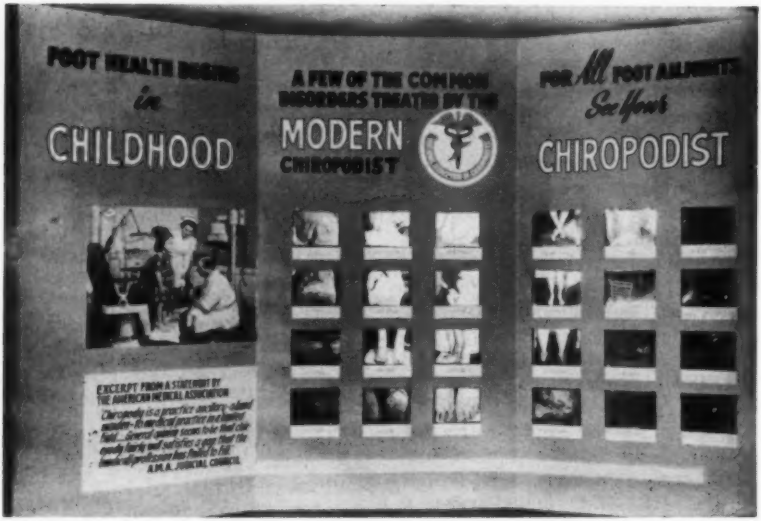

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ganizing, and controlling documentary material. The addition to library shelves of the primary publications of scientific research proceeds more rapidly than the production of indexes, bibliographies, and abstracts needed for the search, selection, and utilization of these primary documents. The desperate solution forced upon scientists and scholars is to ignore all of those portions of the mass of accumulated informational material that are not easily available through the simplest of communication channels. Perhaps this is inevitable, and perhaps the scientist must become reconciled to a situation in which he can expect to be aware of only a small portion of the results of other workers, past and present, even in his own special field of interest.

However, deeply frustrating as the situation is, scholars have not yet fully accepted defeat. There is continual development of devices, techniques, methods and systems for aiding all of the steps concerned in the process of communication—recording, publication, distribution, storage, classification, indexing, abstracting, search, selection, and reproduction of documentary material. In fact, the number and complexity of the devices and systems developed is now somewhat bewildering. Also, the costs of adequate systems and, in some cases, of devices are so great as to retard their full-scale or even partial adoption. It is seldom realized by the author of a scientific paper that the cost of keeping his contribution in the awareness of other workers, present and future, through indexes, abstracts, and bibliographies alone is likely to be much more than the original cost of publication of his article.

"Science Documentation," News Report, Nov.-Dec., 1952.

YOU CAN READ BETTER AND FASTER

PERHAPS the greatest retarding factor that hampers better and faster reading is lack of purpose. It helps to know beforehand just what the article or book is about. Determine what you want from it. Predetermination will tend to aim your eye at the key words, phrases and facts. Then forget about words. "Word worship," or the reverence for the actual words, frequently draws our attention away from the ideas which words are intended to convey. If however, we have an idea of (1) what the writing contains and (2) what we want from it, we can cut through verbiage and concentrate on what the author says, not how he says it. Often the gist may be found at the beginning and end. Just as frequently, the logical progression may move through the first sentence of each paragraph. Most writers make their points in their topic sentences and elaborate through the remainder of the paragraph. Usually the final sentence is merely a restatement of the theme and so, when reading for ideas, it is profitable to concentrate on the first and last sentences of each paragraph.

Office Executive, Nov. 1952

THE STATISTICIAN IN MEDICAL SCIENCE

THE art of applied statistics is, needless to say, compounded of two things—a knowledge of statistical methodology and a wide and detailed knowledge of the data to which that methodology is to be applied. I should hesitate to allocate a relative importance to each of these two aspects, but I hold firmly that both are essential and that the use of the methodology however erudite, without a parallel and exact knowledge of the data

under study can be, indeed is likely to be, most dangerous. It follows that the statistician, if he is to play his proper part in a clinical trial must be in it "up to his neck"; he must be in it from its very start—that is, at the initial planning level. If he is a layman he must endeavor to learn and understand its medical as well as its statistical aspects—and should, I believe, be as intensely absorbed and interested in the one as in the other.

N. Eng. J.M., July 1952

HOW TO STREAMLINE YOUR THINKING

INDUSTRIAL psychologist, Dr. J. S. A. Bois, is teaching Canadian executives, through a course in General Semantics, how to streamline their thinking and say what they really mean. Doctor Bois advocates the study of semantics—the use of the tools we use in thinking, planning, observing and communicating—in industry.

How does semantics help to develop straight thinking? Often conferences can be speeded up and agreements resolved by simply avoiding a confusion of terms, making sure that the word under discussion means the same to everyone. Another step: pinpoint the problem. When using "value terms"—words such as perfect, reasonable, intelligent—add "to me." These words tell nothing specific about the problem but only how we feel about it. A third principle: don't think or talk in "either-or-terms." No situation or thing is all good or all bad, all right or all wrong, and, if thinking is carried along these lines, it stands little chance at arriving at a good solution. Finally, "index" your thoughts and words—(a) realize that things and people change continually; (b) environment or surroundings play a major role in affecting how a person may react or a situation develop; (c) no two things are exactly alike.

The Financial Post (Toronto) August 18, 1951.

WHAT MAKES PEOPLE TICK?

OUR ACTIONS are influenced by three fundamental kinds of needs, wants and desires—the desire to feel physically healthy, psychologically sure of ourselves and personally worthwhile. When we have difficulty in getting these needs satisfied, we show symptoms of our unsureness of ourselves. Under such conditions, people find greater difficulty in getting on the same "wavelength" with us. An ulcer, for instance, may influence a person's actions just as his desire to be psychologically sure of himself. Usually our feelings of security are enhanced if we can get a little attention. But when people can't be liked for who they are, or for what they are, they try to compensate for these feelings and sometimes do things that may seem odd to others on the basis that it is better to be paid some attention, even with disapproval, than to be ignored. It is important to remember, too, that any proposals which can be easily interpreted by the receiver as the key to his greater satisfaction will be readily adopted while proposals which seem to be a threat from his particular viewpoint will be rejected.

Public Relations Journal, Dec. 1951.

BEFORE THE DAYS OF SPECIALISTS

IDLY perusing an old scrapbook one hot night I found the following which I once copied from an ancient signboard preserved in a museum in Cornwall, England:

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W. J. S.

From the Detroit Medical News, Aug. 4, 1952.

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BOOK NOTICES

"A TEXT BOOK OF ORTHOPEDICS," by M. Beckett Howorth, M. D., Clinical Professor of Orthopedic Surgery, New York University Post-Graduate Medical School. Formerly, Assistant Clinical Professor of Orthopedic Surgery, College of Physicians and Surgeons, Columbia University; Associate Attending Surgeon, New York Orthopedic Hospital, et al. (including a section on "Neurology in Orthopedics" by Fritz Cramer, M.D.) . 1110 pages, cloth, $16. W. B. Saunders Co., Philadelphia, Pa.

This book, according to the author, is the outgrowth of more than twenty years' experience in the practice and teaching of orthopedic surgery in hospitals and teaching institutions. Additionally, several experts collaborated to supply specialized information.

While only a single chapter, consisting of 26 pages, is devoted to the

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subject of "Feet and Shoes," other sections of the book contain information on disabilities and deformities affecting the feet and ankles. The chapter on the feet, however, contains the usual information which can be found in any similar book published 25 years ago, and perpetuates the unfounded misconception of the value of the chiropodist to the health and welfare of the patient.

The only redeeming feature of the book is the section on neurology in orthopedics which comes at the very end. For those who already have good books on the subject there is no need to get this one.

HAVE YOU MOVED?

If you have changed your address recently notify us promptly so that you will not miss any copies of the Journal.

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GROWTH OF U. S. HEALTH RESOURCES CHARTED BY BROOKINGS INSTITUTION

For the past two years, the Brookings Institution has been engaged in a comprehensive survey of health services and facilities throughout the U. S. and their availability to the people as a whole. *Health Resources in the United States,* the first publication based on this research, is now available from the Institution at 722 Jackson Place, N. W., Washington 6, D. C.

Under the direction of Dr. George W. Bachman, the survey has covered three major sections. First phase of the report deals with the conspicuous progress in health which this nation has enjoyed during the past 50 years—progress epitomized in the single statement that since 1900 the average life span of Americans has stretched some 19 years to its present high of 68.3 years. Besides over-all gains in the control and cure of disease, the report also indicates some leveling off of the wide variations in health between urban and rural populations, whites and non-whites.

Credit for these advances, according to the report, belongs largely to three factors: (1) progress in medical science; (2) increased use of medical facilities; and (3) control of communicable diseases.

In the second section, a study of medical personnel, Dr. Bachman points out that the core of the nation's health resources is made up of the 200,000 or more doctors of medicine, who bear the major responsibility for the control and direction of health facilities and services. Professional health personnel in general (of whom physicians are 16%; dentists, 7%; nurses, 26%; auxiliary nursing personnel, 30%; pharmacists, 8%; others, 13%) are showing important increases, numbering 1,250,000 in 1950—a gain of about 40% in the past decade alone. This section also surveys distribution of medical personnel, the effect of specialization on over-all availability of medical services and the extent and distribution of group practice.

In its third major grouping, the report presents an inventory of health facilities and services from three different perspectives: (1) the hospital system; (2) the specialized resources developed to meet specific health problems; (3) the resources available for specific

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groups, such as veterans, industrial employees, etc.

In 1950, this study reports, this nation had a total of 1,166,484 hospital beds of all types, of which 994,837 (6.6 beds per 1,000 population) were considered acceptable. Impetus to hospital building from the Hill-Burton Act had resulted, by the end of 1950, in 1,250 hospital projects, comprising 70,634 beds, most of which were not yet in use by the end of 1950. Slightly more than half of these Hill-Burton projects involved small hospitals of less than 75 beds and some 79% of the new general hospital projects are in communities with populations under 10,000.

In all, Dr. Bachman and his associates have drawn together volumes of statistical data and analysis into a significant and readable report. *Health Resources in the United States* is the most complete discussion of factual material on health personnel, facilities and services in print today. It should prove highly useful to all those interested in further improving U. S. health standards.

Chiropodists will be interested in the statistics relating to our profession, which are contained in this report.

The price of this book is five dollars.

ORGANIZATION NEWS

ILLINOIS

A MEETING of the Illinois Association of Chiropodists was held on January 2, 1953, in Chicago. A demonstration on hospital procedure was presented by a panel of members serving on the Chiropody Staff of the Kenner Hospital. Dr. Jack Stern introduced the subject. He also showed a film on joint resection surgery.

OHIO

THE EASTERN Academy of the Ohio Chiropodists Association held a meeting in Youngstown, Ohio, January 25, 1953. Plans for the proposed examination of 4500 school

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children were discussed. Dr. W. Beylin reported on the exhibit he is preparing for use at fairs, schools, etc. James Brown, M.D., lectured on "Peripheral Vascular Diseases."

Dr. S. Pusateri, President of the Ohio Association, attended the meeting of the N.A.C. Study and Planning Committee in Chicago and Dr. H. H. Di Piero addressed the Youngstown Lions Club on "The Effects of Heredity and Environment on the Feet."

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INDUSTRIAL
FOOT HEALTH
PROGRAMS

NEW MEXICO

A MEETING of the New Mexico Association of Chiropodists was held January 11, 1953, in Albuquerque. A proposed legislative program was discussed. The current slate of officers was re-elected.

PODIATRY SQUARE CLUB ELECTS OFFICERS

THE Podiatrists' Square Club of New York held its annual dinner on January 31, 1953. Dr. M. J. Lewi, an honorary members, addressed the group. The following officers were installed: Sublime Podic Healer, Dr. L. Filderman; Deputy Podic Healer, Dr. D. Freeman; Prescriber, Dr. H. Horowitz; Haemostatist, Dr. F. Gould; Editor, Dr. H. Goldwag; Publicitus Di-

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*IGNATOFF, W. B.: J. NAT'L. ASSN. CHIROP. 42:46 (SEPT.) 1952.

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rectus, Dr. H. Kahn; Board of Governors: Drs. S. Agar, H. Sonderling, C. Elias, M. Tepper, D. Perles, H. Kahn.

For information concerning the club, write to Dr. Howard Kahn, 9507 Kings Highway, Brooklyn 12, New York.

MARYLAND

THE Maryland Pedic Association held a regular meeting February 8, 1953, in Baltimore. Drs. Herbert Levin and Samuel Katz presented a lecture and demonstration on office surgical procedures.

IOWA STATE BOARD DATES

THE Iowa State Board of Chiropody Examiners announces that examinations will be held in Des Moines on June 8-10, 1953. For information, write to Dr. Ralph C. Kirkwood, Secretary, 425 Kresge Bldg., Des Moines, Iowa.

TENNESSEE

THE East Tennessee Chiropody Society elected the following officers at its annual meeting held February 7-8, 1953, in Knoxville: President, Dr. Wm. T. Holt; Vice-President, Dr. Wm. I. Norton; Secretary-Treasurer, Dr. Stephen A. Lamm.

WASHINGTON

AT recent meetings of the Western Division of the Washington State Chiropody Association held in Seattle, Dr. Heyes reported on a survey of all practitioners in the area in connection with a proposed membership campaign. Several interesting social and scientific programs were sponsored by the group during December and January. J. W. Miller, M.D., lectured on "Management of Foot Lesions in the Diabetic."

NEW YORK

AT A recent meeting of the New York County Division of the Po-

diatry Society of New York, Dr. Thomas C. Fleming discussed new drugs used in the treatment of fungus infections. Dr. Emanuel Sugarman gave a lecture and demonstration on the "Dynamic Mould." Dr. Mario Miletti, Chairman of the Hospital Affiliation Committee, requests all members to contact hospital authorities where chiropody services are presently not available and impress on these officials the great need for establishing additional foot clinics.

CANADIAN ASSOCIATION ELECTS OFFICERS

At the annual meeting of the Canadian Association of Chiropodists, Dr. J. I. Gorosh of Vancouver, B. C., was elected an honorary life member of the Association. The next annual meeting of the group will be held in Vancouver in September, 1953. The following officers were elected:

President, Dr. I. W. Kaufman
Executive Secretary,
Dr. N. D. Foote
Assistant Secretary,
Dr. Kenneth L. Bates
Vice Presidents:
British Columbia,
Dr. W. J. Hewitt
Alberta, Dr. R. N. Bond
Saskatchewan,
Dr. E. R. Williams
Manitoba, Dr. Mary MacTavish
Ontario, Dr. Robert Smith
Quebec, Dr. Claude Laliberte
Maritimes, Dr. Atlanta S. Sollows

Dr. Gorosh was elected chairman and Dr. D. D. Bruce secretary of the Council on Education.

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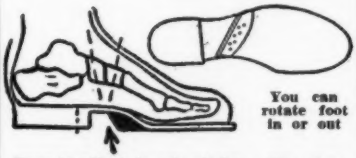

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8, 1953. The following program was offered: "Pediatrics and Chiropody," Norman Kendall, M.D.; "Principles of Roentgen Diagnosis," Raymond K. Locke, D.S.C.; "The National Association of Chiropodists," Max Speizman, D.S.C.; "Principles of Chiropodical Surgery," Lawrence Frost, D.S.C.

PENNSYLVANIA

Philadelphia Chiropody Society

AT RECENT meetings of the Philadelphia Chiropody Society, Raymond O. Stein, M.D., lectured on "Unusual Traumatic Injuries of the Foot and Ankle," and a panel of members participated in a professional economics forum.

Lehigh Valley Society

AT A RECENT meeting of the Lehigh Valley Chiropody Society, Dr. Marvin Weiss lectured on "Children's Foot Care." The following officers were elected: Chairman, Dr. Rollin Brior; Secretary-Treasurer, Dr. R. Shaw.

Dr. Joseph Dougherty was elected representative to the Board of Directors of the Lehigh Valley Diabetes Association.

North Philadelphia Division

AT RECENT meetings of the North Philadelphia Division of the Chiropody Society of Pennsylvania, Dr. John Sharp discussed "Children's Foot Problems," and Frederick A. Fiske, M.D., F.A.C.S., Professor of Surgery at Temple University, School of Chiropody, gave an illustrated lecture on cancer.

NEW JERSEY

THE NEW JERSEY Chiropodists Society held a scientific symposium on March 11, 1953 at the Academy of Medicine in Newark. The following program was presented: "Antibiotics," Marvin Steinberg, Pod. D.; "Pre and Post Operative Medication," G. A. Hoffman, D.S.C.; "Vitamin Deficiencies and Drug Sensitivities," Perry Sachs,

M.D.; "Peripheral Vascular Diseases," Jacob Schmukler, M.D.; "Musculo-Skeletal Conditions," Irving Sperling, M.D.

A.A.C. ELECTS OFFICERS

At a meeting of the American Academy of Chiropodists held in Cleveland, February 1-3, 1953, the following officers were elected:

President, Dr. Ralph Sansone
Vice-President, Dr. J. T. Brightwell
Secretary-Treasurer, Dr. Ellsworth R. Johnson
Sergeant-at-Arms, Dr. T. E. Ingersoll
Trustee, Dr. Jesse Titus

Drs. Cecil P. and Nancy Beach of Cleveland received testimonial awards at the annual banquet. For information concerning the Academy, write to Dr. Ellsworth Johnson, 314 May Bldg., Charleston, W. Va.

QUAD-CITY SOCIETY MEETS

The Quad-City Chiropody Society, comprising practitioners in Western Illinois and Eastern Iowa, held a meeting in Moline, Ill., February 21, 1953. Dr. F. Sauerman lectured on "Casting for Physiological Rest." The following officers were elected: President, Dr. D. E. Harris; Vice President, Dr. R. Thompson; Secretary-Treasurer, Dr. R. Holdeman.

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CHIROPODISTS SERVE LOCAL CIVIL SERVICE COMMISSION

THE Municipal Civil Service Commission of Glen Cove, N. Y., on September 1, 1952, appointed three chiropodists to serve as official examiners. The appointees are Drs. A. Graf, W. Pincus, and L. A. Alchermes. Their duties include examination of the lower extremities of applicants and determining the status of the individual's foot health in relation to the specific position they apply for. Examinees must receive approval from one of these practitioners in order to qualify for a position.

DR. KOHL GIVES SURGERY LECTURE

DR. J. M. KOHL of Chicago participated in the surgery course, which was recently given by the Illinois College of Chiropody.

DEATHS REPORTED

Dr. Nellie J. Hayes
Lynn, Mass.

Dr. Amanda E. Williams
New Haven, Conn.

Dr. A. L. Hubby
Providence, R. I.

DR. ARTHUR L. HUBBY, long-time secretary of the Rhode Island Chiropodists Society, died December 28, 1952. He practiced for many years in Providence. Dr. Hubby received a degree from Temple University in 1946 and an honorary degree from the Chicago College of Chiropody in 1942. He had served as President of his state society. He is survived by his wife and son, Dr. Raoul G. Hubby, who was associated in practice with his father.

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REGION THREE
Atlantic City, N. J., April 23-26, 1953
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REGION FOUR
Cleveland, Ohio, June 4-7, 1953 (CE)

REGION ELEVEN
Fort Worth, Texas, June 18-20, 1953 (CE)

REGION TEN
Birmingham, Ala., Oct. 2-4, 1953
Hotel Tutwiler

REGION ONE
Boston, Mass., Oct. 10-12, 1953
Sheraton Plaza

MISSOURI ASSOCIATION OF CHIROPODISTS
St. Louis, Mo., Oct. 10-11, 1953
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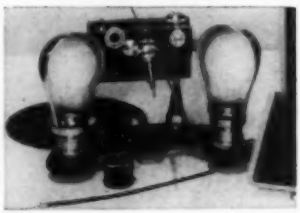

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